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ELEMENT OF THE SAN MATEO COUNTY GENERAL PLAN

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COUNTY of SAN MATEO

PLANNING DEPARTMENT

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March 5, 1974

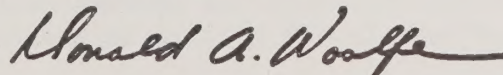
San Mateo County
Board of Supervisors
Hall of Justice and Records
Redwood City, CA 94063

Honorable Board of Supervisors:

We are pleased to transmit the final printed copy of the Conservation and Open Space Element of the General Plan for San Mateo County. This plan, adopted by your Board on December 20, 1973, fulfills the State mandate that each county have an adopted Conservation and Open Space Element by December 31, 1973. The plan contains; (1) revisions to the Parks and Open Space Plan adopted in 1968, (2) broad new policies for preserving the natural and cultural resources of the County, (3) specific policies designated to protect areas of special ecological importance, and (4) policies to guide the managed production of resources. The plan establishes the basis for the Resource Management Zoning Ordinance adopted by your Board on December 20, 1973 in accordance with State Law.

We wish to thank all the organizations, individuals, agencies and other County departments that made significant contributions to this plan.

Sincerely,



Donald A. Woolfe
Planning Director

COUNTY BOARD OF SUPERVISORS	Robert B. St. Clair, Chairman Gerald F. Day Jean Fassler James V. Fitzgerald William H. Royer
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ACKNOWLEDGEMENTS:

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Max Meyer, County Manager's Office; Jack Brook and Harry Dean, Parks and Recreation Department; Henry Eich and Gary Ott, Health Department; S. H. Cantwell and Bob Sans, County Engineers; Bruce Elliott, Maryann Danielson, Ken La Joie, Tom Carlson, R. Burton Litton, Jr., Jack Canadas, Harlan Hill, Clarence Sill, Roy Bowman, F. B. Ullmann, and numerous other individuals who have willingly contributed to the review of this report.

RESOLUTION NO. 32283

BOARD OF SUPERVISORS, COUNTY OF SAN MATEO, STATE OF CALIFORNIA

RESOLUTION ADOPTING THE RECOMMENDED OPEN SPACE AND CONSERVATION ELEMENTS OF THE GENERAL PLAN AS THE OPEN SPACE AND CONSERVATION ELEMENTS OF THE GENERAL PLAN FOR SAN MATEO COUNTY REGULARLY PASSED AND ADOPTED THIS 20TH DAY OF DECEMBER, 1973

RESOLVED, by the Board of Supervisors of the County of San Mateo, State of California, that

WHEREAS, the Planning Commission of this County has approved and recommended for adoption to this Board proposed Open Space and Conservation Elements of the San Mateo County General Plan; and

WHEREAS, said elements have been referred to the planning agency of every city within the County and every other city that abuts upon the County and the Local Agency Formation Commission of San Mateo County; and

WHEREAS, the San Mateo County Planning Commission has held four public hearings on the Open Space and Conservation elements of the General Plan after giving the notice required by law and finds that the proposed elements of the General Plan include suitable, logical and timely elements of the General Plan for the future development of the County of San Mateo and complies with the mandatory requirements of State law; and

WHEREAS, this Board has held public hearings and complied with all the provisions of law, including the mandates of Article VII of the Charter of San Mateo County:

NOW, THEREFORE, IT IS HEREBY ORDERED AND DETERMINED that the San Mateo County Board of Supervisors does hereby adopt the proposed Open Space and Conservation Elements presented by the Planning Commission as the Open Space and Conservation Elements of the San Mateo County General Plan.



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Chapter **A**
SUMMARY

SUMMARY

Introduction

Few counties in the United States possess the variety of environmental resources and scenic amenities found in San Mateo County. It is the combination of scenic beauty and environmental diversity in close proximity to millions of people that creates the need for effective policies and action programs for managing and protecting environmental resources.

The Conservation and Open Space Element represents the first attempt to develop a comprehensive set of management policies affecting overall environmental quality in San Mateo County. It is based on three overall goals: 1) preserving and enhancing environmental quality, 2) encouraging agriculture as a key to open space management and preservation and, 3) preserving natural resources for this and future generations. The element builds upon work previously undertaken and adopted by the County.

The Element constitutes a policies plan for the unincorporated areas of the County. As such, it establishes overall guidelines and/or criteria for decision-making rather than prescribing precisely what activities can occur in every area. The plans of the cities, including areas such as the South Bay Wildlife Refuge will be incorporated into a comprehensive County-wide plan as a part of the continuing environmental resources planning program.

According to State law every city and county in California must adopt a Conservation and Open Space Plan by December 31, 1973. Open Space land is defined as any parcel of land or water which is essentially unimproved and which is designated on an open space plan by open space for 1) preservation of natural resources, 2) the managed production of resources, 3) outdoor recreation, and 4) public health and safety.

Conservation and Open Space Goals and Policies

The plan sets forth study findings, goals and policies for the following resource categories: water, natural vegetation, fish and wildlife, soils and agriculture, minerals, cultural, and scenic resources. The findings were derived from background research papers prepared on each of the resource categories. The goals

represent a general direction for more specific policies for resource management, and lead to an action program for implementing the policies.

The plan establishes two types of policies. First, general management policies have been designed to apply to all lands over which the County has jurisdiction. Included in this category are generally applicable policies which are broad in scope rather than tied to specific locations. In addition to general policies, primary area policies have been developed. These are policies that should be applied in specific areas which are deemed significant to the protection and preservation of a particular resource. General resource management policies are summarized below.

Water Resources

The plan recommends significant new water resources management policies that establish the basis for a comprehensive water management plan for the County. Policies are suggested to preserve the quality of water, protect flood plains, encourage wider use of treated wastewater, and to support additional studies leading to a more complete understanding of the location, quality, safe yield, and migration patterns in ground water aquifers. The plan recommends that a County-wide water agency should be created with full powers to coordinate and plan a comprehensive water resources conservation and development program.

Natural Vegetation

Policies requiring the preservation of natural vegetation, increased fire protection, and the preservation of heritage trees and groves are recommended. Additional policies are recommended to protect rare and endangered species, natural water ways and to provide for erosion control.

Fish and Wildlife

Policies are recommended to minimize the impact of public and private developments on fish and wildlife resources, to encourage the development of marine fisheries for recreational and commercial use where not detrimental to the environment, and to limit the intensity of recreational use to protect species and preserve habitat. More specific policies are recommended to encourage establishment of wildlife refuges for rare or endangered species, and to protect breeding areas and spawning grounds.

Soils and Agriculture

Preservation of agriculture as a viable economic activity is a key element in the preservation of open space. Efforts to solve problems of water supply, farm labor housing, and property taxes are recommended. Further, policies are recommended to avoid erosion and sedimentation problems, protect prime agricultural land from conversion to urban and suburban use, preserve sand dunes in their natural state, and to encourage farmers to enter into Williamson Act contracts.

Minerals

The plan recommends new policies for identifying and protecting the mineral resources of the County, and to ensure their availability for use when required. Plans for rehabilitation, enhancement and reuse of mineral extractive areas should be made a condition of any use permit issued by the County.

Cultural Resources

The plan recommends policies to preserve, interpret, and where feasible, make accessible to the public the archaeological resources of San Mateo County and to preserve sites for future scientific research and educational programs. Policies are recommended that would support additional research and exploration of potential sites, develop educational programs, and result in archaeological or paleontological surveys being required as part of environmental impact reports whenever sites may exist within a project area.

Scenic Resources

The plan recommends the goal of protecting and enhancing the natural scenic resources of San Mateo County. The plan further recommends that site design criteria be incorporated into the zoning and land division code to ensure compatibility with the scenic environment, the establishment of aesthetic controls over utility structures, the protection of shorelines, and scenic views, and the protection of scenic values along transportation corridors.

Addendum to Adopted Parks and Open Space Element

This section of the plan amends the 1969 adopted Parks and Open Space Element to bring it into conformance with recent State legislative requirements and plan

element guidelines. The following specific amendments are recommended.

Park Acquisition Program Revisions The following changes are made to the 1969 Park Acquisition Program:

- (1) Acquisition of the "Sand Caves" near Skyline is added to the 10 year program list of park acquisitions.
- (2) The Tobin Clark Estate, presently being privately developed for residential use, is deleted from the list of park acquisition priorities.
- (3) Lands within the proposed South Bay National Wildlife Refuge which were shown for County acquisition in the 1969 Park Plan are shown as federal responsibility in the New Parks and Open Space Land Use Designations Map.

Changes to Areas Designated Open Space The new amended plan makes substantial changes from the existing Parks and Open Space Plan in the delineation of areas designated general Open Space. The general open space designation in the amended plan includes all lands defined by the following criteria:

- (1) On the Coastsides, virtually all lands are designated Open Space which are not presently in urban uses or not subdivided or zoned for development or which are not designated as Rural, Service Centers. The Open Space area includes lands for the preservation or managed production of natural resources for recreation and lands posing severe hazards to public health and safety.
- (2) On the Bayside, unincorporated lands which pose severe hazards to public health or safety, or which are inaccessible, or deemed unsuitable for development, are designated as Open Space. The five Bayside areas which fall under this designation are portions of San Bruno Mountain, portions of Sugarloaf Mountain, private lands which are functionally part of the San Francisco Watershed, unsubdivided lands south of Portola Valley and lands west of Woodside extending to Skyline Boulevard.

Designation of Land as "Phase II Urban Reserve/Open Space" On the Mid-Coastsides, lands which are physically capable of urban development, which may be easily provided urban services, and which are adjacent to existing or proposed future development are designated as Phase II urban reserve/open space. These are lands which could ultimately develop at urban densities following substantial infilling within areas presently slated for development.

Designation of Areas as "Vacant Lands Under Study" Vacant lands which are virtually certain to develop consistent with adjoining areas are designated "urban". However, large tracts of land in a single ownership which are relatively independent of surrounding urban development, and for which planning has not yet been com-

pleted, are classified "Vacant Lands Under Study" in the new Parks and Open Space Land Use Designations Map. Lands under this designation must be planned as a unit so that any development of the land respects the natural features and open character of the sites and conforms to an overall site plan. It is anticipated that some areas with this designation will ultimately be left in permanent Open Space.

Designation of Nodes as Rural Service Centers Three South Coastside communities are designated as Rural Service Centers in the plan--Pescadero, San Gregorio and La Honda. Expansions of services for farms, tourists and Coastside residents will be directed to these centers, and expansion of housing for persons employed on the South Coastside will be permitted.

Action Program

The action program consists of a combination of property acquisitions, regulations, public education, and additional surveys and studies. The ten year parks and open space acquisition and development program is a key element of the action program along with the Open Space Zoning Ordinance. Specific studies are recommended for water, agriculture and natural vegetation, fish and wildlife, mineral and energy resources, and a fire safe program. Additionally, the action program calls for a complete re-examination of the County Parks Acquisition Plan and a study leading to criteria for guiding public and private recreational developments.

Conclusion

The Conservation and Open Space Element is the first step towards developing a total Environmental Resources Management Element (E.R.M.E.). In addition to conservation and open space material included in this document, the ERME will contain: (1) updated and revised park acquisition priorities, (2) an updated corridors component, which includes bicycle and riding trails and the required scenic highways element, and (3) a recreation element, which includes standards for public and private park and recreational developments. Resource categories will be integrated on a geographic basis, for example, by watershed, to assure compatibility among resource management programs within logical planning areas.



Chapter **1**
INTRODUCTION

INTRODUCTION

Few counties in the United States possess the variety of natural communities and scenic amenities of San Mateo County. From ocean to bay, San Mateo County contains a wide range of topographic features, geological forms, vegetative types, and wildlife communities. The County's natural environment is all the more significant and vulnerable because of its close proximity to a highly urbanized permanent county population and to one of the most populous urban regions in the nation.

It is this almost unparalleled combination of scenic beauty and environmental diversity in close proximity and easy accessibility to millions of people which creates many potential resource management problems and a corresponding need for a conservation open space plan to establish explicit policy guidelines for managing and protecting environmental resources.

As stated in the newly adopted State Environmental Resources Management Element Guidelines, the various components of the environment are interdependent and functionally related. Every user of the land is in fact a trustee responsible for future generations which will still depend upon that same land. The decisions of one generation create the heritage of the next. Implicit in new State planning legislation, including the requirements for Conservation and Open Space Elements, is the recognition that local government must develop a comprehensive environmental management approach to avoid degradation of the environment and to offset that degradation which has already occurred.

The Conservation and Open Space Element is the first attempt to develop a comprehensive set of management policies affecting environmental quality in San Mateo County. There are three basic goals: (1) preservation and enhancement of environmental quality, and (2) preservation of natural resources for this and future generations, (3) Encouragement of agriculture as a key to Open Space Management and Preservation. The Element establishes County Policy for the protection of natural vegetation, management of fish and wildlife, and preservation of soils and

agriculture. The Element includes several new policies on water resources that lay the groundwork for a water resources management program so vitally needed by the County and also establishes initial resource management policies for mineral, cultural and scenic resources.

The Element constitutes a policies plan for the unincorporated areas of the County. As such, it establishes over all guidelines and/or criteria for decision-making rather than setting forth detailed prescriptions for what ought to occur in every area. The plans and programs of the cities, whose jurisdictions encompass such environmentally crucial areas as the 5,000-6,000 acre South Bay Wildlife Refuge, will be incorporated into a forthcoming comprehensive County-wide plan as a part of the continuing environmental resources planning program.

THE STATE LEGISLATIVE MANDATE FOR CONSERVATION AND OPEN SPACE ELEMENTS

Under Sec. 65302 of the State Government Code, every city and county must adopt a Conservation Element no later than December 31, 1973. The purposes of this element are the conservation, development and utilization of natural resources including, but not limited to, water and its hydraulic force, rivers and other waters, harbors, fisheries, forests, wildlife, soils and minerals.

Under Sec. 65563 of the Government Code, every city and county must adopt and submit to the Secretary of the Resources Agency "a local open-space plan for the comprehensive and long-range preservation and conservation of open space land within its jurisdiction." The intent of the Legislature is stated in Sec. 65562, which is "to assure that cities and counties recognize that open-space land is a limited and valuable resource which must be conserved wherever possible." Sec. 65561 states that preservation of open space land is necessary for the maintenance of the economy of the State, for availability of land for production of food and fiber, for enjoyment of scenic beauty, for recreation, and for use of natural resources. Also, the legislation states that it is in the public interest to discourage premature and unnecessary

conversion of open space to urban uses, and to assure orderly growth and development of the State and preservation and conservation of its resources.

Open space land is defined in Sec. 65560 as any parcel of land or water which is essentially unimproved and which is designated on an open space plan as open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and public health and safety.

An open space plan must contain an action program for implementing the plan (Sec. 65564). Any action by San Mateo County to acquire, dispose of, restrict or regulate the use of open space land must be consistent with the County's open space plan (Sec. 65566). According to Sec. 65567, "no building permit may be issued, no subdivision map approved, and no open space zoning ordinance adopted, unless the proposed construction, subdivision or ordinance is consistent with the local open space plan." By January 1, 1974, the zoning ordinance must be consistent with the adopted general plan of the County (Sec. 65860). An open space zoning ordinance, however, must be adopted by December 31, 1973, which is consistent with the open space plan (Sec. 65910).

Guidelines of the Council on Intergovernmental Relations (CIR) for the preparation of general plan elements state that a general plan and its elements should be used in the review of Environmental Impact Reports (EIR). If the plan and its elements have adopted standards, an EIR should be reviewed for consistency with those standards. The fact that a specific project may conform to a plan and its elements does not obviate the need for an EIR, since the purposes of an EIR include determination of whether or not a project will have a significant impact on the environment, consideration of alternative projects, mitigation measures for reducing adverse impacts, and public disclosure.

DESCRIPTION OF APPROACH

Due to the overlapping and highly interrelated nature of the Conservation and Open Space Elements, a joint Conservation-Open Space Element has been prepared for San Mateo County. Guidelines prepared by the Council on Intergovernmental Relations sanction and encourage such consolidation of related plan elements. The Conservation and Open Space Elements are both resource-oriented, in that they are both concerned with preservation and managed production of resources

The Conservation-Open Space Element directly incorporates and expands upon the content of the three existing Planning Department background and policy documents concerning natural resources described below. The data and background information, as well as the County-adopted goals, objectives, policies, and standards contained in these documents should be considered an integral part of the Conservation-Open Space Element unless superseded by new information or policies developed in this document.

- (1) The Physical Setting of San Mateo County, May 1968, contains technical information on climatic characteristics, land forms, soils and geology, minerals, and vegetation.
- (2) The Forest Resources Study Committee Report, March 1971, includes detailed information and policy recommendations for the preservation and utilization of the forest resources of San Mateo County. The report describes natural features and processes in the forested areas, including geology, vegetation, fish and wildlife, fire and water, and describes policy-related issues such as land use and logging practices. Development of this report involved extensive citizen participation. A set of policies stemming from this study was adopted by the County Board of Supervisors.
- (3) The County Parks and Open Space Plan, developed in conjunction with on-going involvement of over 200 citizens, was adopted by the Board of Supervisors in 1969. This plan document consists of objectives, principles, and policies in

the following areas: open space and conservation, city and county parks, waterways, historic sites, scenic highways, trails and beaches. The primary emphasis of this document, however, is the development of a public parks and recreation acquisition program. Existing facilities are described, future recreational demands projected, and implementation measures recommended.

In November, 1972, the electorate approved a County Charter Amendment requiring that for a ten year period an amount of money equal to that which would be raised by a ten cent tax rate be allocated annually for park acquisition and development purposes. A list of project priorities has been approved by the County Board of Supervisors, subject to their annual review, and this program is an integral part of the revised Conservation-Open Space Element.

The Open Space - Conservation Element satisfied and in some cases, exceeds State Planning Guideline requirements. For example, detailed scenic and cultural resources management programs have been developed, although State law requires only that Scenic and Cultural Open Space Areas be defined. This document refines the 1969 Parks and Open Space Element by redefining "general open space" consistent with current State legislation.

The Conservation-Open Space Element is the first step toward developing a total Environmental Resources Management Element (ERME). In addition to the conservation and open space material included in this document, the ERME will contain: (1) updated and revised park acquisition priorities, (2) an updated corridors component, which includes bicycle and riding trails and the required scenic highways element, and (3) a recreation element, which includes standards for public and private park and recreational developments. Resource categories will be integrated on a geographic basis, by watershed, for example, to assure compatibility among resource management programs within logical planning areas.

Conservation issues confronting not only San Mateo County but all urban regions include factors of human awareness, understanding, personal involvement and social responsibility.

in addition to technological factors of natural resource management. Therefore, extensive public participation will be encouraged throughout the planning process. The possibilities will be explored for additional public information and educational programs dealing with natural resource conservation, wise utilization, and land abuse. Also attention should be directed toward the development of conservation education curriculum in our schools, community colleges, and adult education centers.

ORGANIZATION OF REPORT

Chapter Two of this report includes the findings, goals, and policies developed for each of seven conservation element categories: water resources, natural vegetative resources, fish and wildlife resources, soil and agricultural resources, mineral resources, cultural resources, and scenic resources. For each resource category, certain policies are set forth which are generally applicable, and others are stated for the management of specific geographic areas identified as of primary importance for that resource.

To provide a backdrop to the Conservation-Open Space Element, information on County economic and social forces, including data on land consumption, is presented in Chapter Three.

Chapters Four through Ten deal individually with the seven conservation element categories, providing the background information leading to the findings, goals, and policies contained in Chapter Two.

Chapter Eleven summarizes proposed modifications to the existing Parks and Open Space Plan. It contains minor revisions to the adopted park acquisition and development program, and major changes in the definition of areas designated General Open Space including explicit criteria for imposing this designation. This chapter also contains an inventory of major vacant lands in the County. Open Space recommendations are summarized in the new Parks and Open Space Land Use Designations Map contained at the end of this report.

Chapter Twelve contains an action program for the implementation of the Plan as required by State law. This chapter describes existing County ordinances and controls in support of Conservation and Open Space objectives, and proposes new measures consistent with the plan elements.



Chapter **2**

FINDINGS, GOALS AND POLICIES

Introduction

This section includes the findings, goals and policies developed for the combined Conservation and Open Space Elements of the San Mateo County General Plan. The findings, goals and policies presented here supplement those already developed and adopted in the County's Parks and Open Space Plan and those adopted from the Forest Resources Report. In addition to policies listed in this Chapter, other important policies are contained in Chapter 11 ("Open Space Addendum") and Chapter 12 ("The Action Program").

Findings, goals and policies have been developed for each of the conservation sub-element chapters in this report, including Water, Natural Vegetation, Fish and Wildlife, Soils and Agriculture, Mineral Resources, Cultural Resources and Scenic Resources.

The findings listed under each conservation sub-element category are derived directly from the information developed in Chapters 4 through 10. Goals follow from a critical examination of the background information and findings. They establish the basis for and direction of the policies, which ultimately should lead to the achievement of goals. Policies require the County to take direct actions to protect and preserve resources, to initiate studies, and to encourage and support conservation actions by other agencies and governmental units.

Policies are grouped into two major categories: General Management Policies and Primary Area Policies.

1. General Management Policies

Policies in this category apply to all lands over which the County has jurisdiction. Included are generally-applicable policies which are broad in scope rather than tied to specific locations, and which influence the direction of governmental programs. An example of a General Management Policy is the recommendation in the "Water Resources" section to create a County-wide water agency with full powers to develop a water plan.

2. Primary Area Policies

These are policies which should be applied in specific areas which are deemed significant to the protection and preservation of a particular resource. Primary Area Policies have been developed for all of the seven sub-elements of the Conservation Element and should be applied in the geographic areas

designated as "Primary" for each of the resource categories. In areas where they apply, Primary Area Policies take precedence over General Management Policies.

Maps have been prepared which define selected Primary Areas. These maps are contained in the chapters of this report to which they relate. Due to time and information constraints, however, it has not been possible to identify and map all Primary Areas for each resource category at this time. Criteria are developed in this Chapter which define the basis for establishing Primary Areas and around which additional mapping will proceed.

Because policy indications for the management of different resources in a given geographic area may conflict, it is necessary and intended ultimately to identify and map all Primary Areas for the different resource categories. Land designated as a Primary Area under only one resource category will be allowed any use permitted under the Zoning Ordinance which would not harm that resource.

Where land is identified as a Primary Area for two or more resource categories, an investigation will be made to determine whether the respective resource management programs might conflict. If they do not conflict, any use permitted by the Zoning Ordinance might be allowed, provided such use would not violate the multiple Primary Area Management Policies. However, if the Primary Area Management Policies are found to conflict, a determination must be made as to which resource should be considered dominant in the affected area. The outcome of this process will be a composite map of all Primary Areas where potential conflicts between applicable resource management policies have been resolved.

To create the composite map, criteria must be developed and adopted by the County Board of Supervisors to establish priorities among potentially conflicting Primary Area Management Programs. Factors such as the availability of the resource, its distance from population centers, the relative impact on man versus impact on nature of favoring one resource over another, the irreversibility of favoring one resource over another, and the manner in which relative impacts occur over space and time, will be employed in developing the criteria for conflict resolutions.

An important tool in resolving potential policy conflicts will be the examination of all proposed policies as they impinge on functional watershed areas to determine whether they are consistent and mutually reinforcing. The natural watershed planning unit is widely recognized as the rational unit for resource management planning. It is likely that priorities for the application of potentially conflicting resource management policies will vary for different watershed units.

WATER RESOURCES

Water Resources Findings

1. The streams and other bodies of water in San Mateo County have important values for recreation, fish and wildlife, water supply and agriculture. Activities throughout entire watershed units, including streams and tributary lands, have important effects on water quality and quantity.
2. There is no single water agency in San Mateo County which has the legislative authority and responsibility for the orderly development and conservation of water resource. Municipal and industrial water supply is, in the main, planned and managed by the San Francisco Water Department, an out-of-County agency. There are twenty-eight agencies in the County that store and sell water to consumers. In addition to coordinating the efforts of these agencies, a County-wide water agency might plan and manage other aspects of water resources such as water supply, wastewater treatment and disposal, ground water utilization and recharge, and the use and preservation of natural water bodies. The Peninsula Water Agency, a voluntary group with representatives from all cities in the County and water districts, might be restructured to officially function in this capacity.
3. The location and potential yield of groundwater aquifers has not been thoroughly identified. The resultant impacts of aquifer use are not sufficiently understood. Indications are, however, that the groundwater resource is being overdrawn.
4. While water supplied for municipal and industrial use by local water agencies must meet health standards, limited regulatory control exists over single domestic water sources.
5. Historically, limited treatment of waste waters from municipal and industrial treatment plants has had an adverse effect on the receiving waters.
6. The use of treated wastewater for nonconsumptive use is now technically, economically and socially acceptable..
7. There are a number of developed areas in the County that flood with sufficient frequency to cause a continuing threat of property damage and pose a threat to life, public health and safety. Other flood-prone areas are relatively free of urban development and could be retained in a relatively natural condition to obviate future problems.

Water Resources Goals and Objectives

Goals for the conservation and development of water resources in San Mateo County should be:

1. To maintain and improve the quality and dependability of water sources.
2. To safeguard productive capacity of groundwater aquifers, flood carrying capacity of streams and storage capacity of reservoirs, and to provide for aesthetic enjoyment and other beneficial uses.
3. To conserve water for man's beneficial use and for the supportive role water plays in the ecological system.

4. To minimize flood, sedimentation and landslide conditions so as to avoid costly property damage, safety hazards and ecological disruption.
5. To preserve and enhance selected water resources areas in recognition of their importance to open space and conservation values, and their potential for present and future use and enjoyment.

Water Resources General Management Policies

1. The quality of receiving waters should be maintained at acceptable levels as determined by appropriate existing regional agencies.
2. The retention of water courses and water bodies in their natural state should be encouraged.
3. Encroachment of development into the perimeter of natural water bodies and flood plains should be carefully regulated in order to minimize negative environmental impact.
4. Activities which would accelerate erosion and stream and water body sedimentation should be carefully regulated.
5. Water resources of the County should be studied in depth. Such a study should provide information on relationships between water and other valuable resources, guide functional departments such as Parks and Recreation and Engineering in the decision-making processes, and provide valuable information to the public for both educational and private market decision-making purposes.
6. The use of wastewater for groundwater recharge should be encouraged where it can be demonstrated this is a safe method of disposal.
7. The wider use of treated wastewater for non-consumptive uses should be encouraged.
8. Flood plain management programs should be formulated for each individual flood plain; these programs should be implemented through the adoption of a flood plain zoning program.
9. Flood plain characteristics should be more carefully identified. Primary and secondary areas should be established. County records should indicate those properties which lie within the one-hundred-year flood plain. The County should request the State Real Estate Commissioner to provide a land hazards report which covers flood plains.
10. The County should support studies leading to a more thorough understanding of the groundwater aquifers, their location, quality, safe yield, and migration patterns. The purpose of such a study would be to formulate a management program that would insure continued beneficial use and preclude disasters such as salt water intrusion.
11. Within the County's watersheds, there should be a study of acceptable levels of turbidity and a program should be established to monitor the effect of physical development on these turbidity levels.
12. A County-wide water agency should be created with full powers to coordinate and plan a comprehensive water resources conservation and development program.

A high priority should be given to the development of a County-wide water plan which incorporates the goals of this section.

Criteria for Determining Primary Value Water Resource Areas

1. All waters that may be put to beneficial use by man, and the critical watershed areas adjoining them.
2. Waters significant for another primary resource such as fish and wildlife, natural vegetative cover, recreation or scenic resources.
3. Waters and their immediate watershed areas that have the potential for greater use due to quality or quantity, where potential could be increased by development, treatment or recycling.
4. Recharge areas and the underlying aquifer.

Primary Water Resources Management Policies

1. Special precautions should be observed to assure that the quality of primary area waters is not adversely affected by development or other activities of man. No use or activity should be allowed which might harm a beneficial use.
2. Potential water resource areas should be limited in their use so that future water development options are not preempted. Such action should be preceded by an evaluation of watersheds to determine their value for beneficial use, and to determine primary watershed areas. This should be done as a part of General Management Policy Number 12.
3. In groundwater recharge areas, only uses compatible with the recharge process should be permitted.
4. Waters designated primarily for fish and wildlife should be protected against excessive withdrawals which would endanger fish and wildlife or would interrupt normal migratory patterns.

NATURAL VEGETATIVE RESOURCES

Definition of Natural Vegetation

Natural Vegetation: For the purpose of the General Plan there will be no distinction made between native vegetation and natural appearing, ecologically-compatible vegetation which has been introduced or altered by man.

Natural Vegetative Resources Findings

1. With the exception of the harvesting of forest products which is regulated at the County and State levels, there are no direct governmental controls to regulate or prevent vegetation removal or alteration.
2. There are indirect controls over the removal or alteration of vegetation. These regulations, often exercised by regional agencies, have implications for water and air quality, the creation or reduction of fire hazard, etc.
3. Traditionally, vegetation which provides no economic benefit tends to be subject to complete removal when the land owner decides to convert his land to other income-producing uses.
4. There is a lack of data about the natural vegetation within San Mateo County. There are no accurate:
 - vegetation type/plant community maps,
 - rare or endangered species maps or inventories,
 - timber inventories or growth plots.
5. Most of the natural vegetation in the County is located on private property.
6. Natural vegetation is not necessarily more desirable than introduced vegetation. Exotic vegetation which is well suited to its new macro and micro environment may, under some conditions, yield greater benefits to the County and the landowner.
7. Vegetative cover has a number of beneficial impacts upon the environment. It provides:
 - water quality control,
 - soil movement control,
 - wildlife habitat,
 - reoxygenation through photosynthesis and limited atmospheric purification
 - scenic beauty
 - a reduction in noise

Natural Vegetative Resources Goals and Objectives

1. To manage and protect the natural vegetation resource for clear and demonstratable, purposes such as:
 - protection of scenic corridors and the views therefrom adjacent to public property,
 - protection of streamside zones where fisheries and water quality aspects are important.
 - protection of watersheds where quality is endangered.
2. To protect natural vegetative communities from abuse, misuse or degradation resulting from inappropriate land utilizations.
3. To encourage recreational uses of natural areas to the extent that such use is compatible with the maintenance of wildland ecosystems.
4. To provide improved information on vegetation, through inventories and mapping programs.

5. To protect vegetative resources from wildland fires.
6. To protect and preserve areas containing heritage trees or groves for the benefit of the County and Bay Region.
7. To protect rare, endangered or unique species of plants and plant communities from reduction in their range or degradation of their environment.
8. To promote the practice of intensive forest management to ensure continuance of this resource.
9. To protect and enhance watershed quality and air quality.

Natural Vegetative Resources General Management Policies

1. The County should require the maintenance of the natural vegetation until it can be demonstrated, beyond a reasonable doubt, that a proposed change in vegetative cover will provide equal or greater environmental protection than that provided by the natural vegetation.
2. The County should protect natural vegetation from fire by implementing the "fire safe" program as endorsed by the County Supervisors Association of California, and should protect the land from trespass.
3. The County should inventory and map all natural vegetation with emphasis on rare, unique and endangered species.
4. The County should preserve its heritage trees and groves through adoption of a Heritage Tree and Grove Ordinance.

Criteria for Determining Primary Value Natural Vegetative Resource Areas:

A natural vegetation area is assigned a primary value where:

1. The vegetation is rare or endangered, as defined by the State, or the vegetation is unique and deemed to be a valuable component of an interrelated ecosystem.
2. The vegetation is necessary for the perpetuation of rare or endangered species of animals.
3. The vegetation provides needed protection against erosion such as stabilizing sand dunes or stream banks.
4. The vegetation forms a significant part of the viewshed as seen from urban areas or public roads and trails.
5. The vegetation protects the water resources of the County.
6. The vegetation consists of commercial tree species, site Classes 3 through 6, as found in the report Forest Resources of San Mateo County.

Primary Natural Vegetative Resource Area Management Policies

1. In primary vegetative resource areas, land uses requiring major modification of the natural vegetation should be prohibited. Urban services or facilities should not be extended into areas where such extension would cause major modifications of the natural vegetation.

2. Those species which are rare, unique or endangered should be protected from destruction or alterations of their environment which would impair their health and/or vigor.
3. Significant stands of old growth trees deemed of unique or heritage quality should be preserved for present and future generations.
4. Highest forest land management practices should be assured through controls over the harvesting of forest products.
5. Riparian vegetation should not be cut or altered when such action will cause stream bank erosion or be deleterious to the fisheries resource or water quality

FISH AND WILDLIFE

Fish and Wildlife Findings

1. San Mateo County contains four "endangered" species, designated under State law by the State Fish and Game Commission: the Salt Marsh Harvest Mouse, Clapper Rail, Least Tern and San Francisco Garter Snake. Endangered species are threatened by direct or indirect habitat reduction and human disturbance.
2. Urbanization, development of public facilities, or intensive recreational use may eliminate or degrade valuable fish and wildlife habitat. Representative grassland supporting wildlife habitat is becoming scarce in San Mateo County.
3. Wildlife management practices applicable to both private and public uses of land, include agricultural practices, grazing, logging, mining, oil and gas exploration, and extraction, and fire control, all of which affect fish and wildlife habitats and populations.
4. Protection and preservation of wildlife habitat depends largely on land use policy and regulation at the County level.

Fish and Wildlife Goals and Objectives

1. To avoid degradation and destruction of natural wildlife habitat.
2. To protect and preserve native species of wildlife whose habitats are threatened.
3. To conserve and develop fish and wildlife resources which provide outdoor recreation, afford economic benefits, or have scientific or educational value.

Fish and Wildlife General Management Policies

1. Water quality and quantity should be maintained to preserve riparian and marine habitats.

2. Logging, mining and excavations should be regulated to prevent adverse impacts on fish and wildlife.
3. Impact on wildlife habitat and movement patterns should be minimized in the planning, design, siting and construction of public capital improvements and facilities such as roads, solid waste disposal sites, harbors, water conservation and flood control projects, as well as in large private structures and improvements.
4. The County should review its predator control program to determine its impact on the ecology of the County.
5. Wildlife management on private lands devoted to agriculture, grazing, forestry or recreational use should be encouraged.
6. The development of marine fisheries for recreational and commercial use should be encouraged where not detrimental to the environment.
7. Public access to, and recreational use of inland sport fisheries should be encouraged where not detrimental to the environment.
8. Recreational use of public wildlife areas, including hiking, picnicking, observation and photography should be supported, but use intensity should be controlled to protect the species and preserve habitat.
9. A wildlife inventory or census should be conducted in the County to systematically determine the present wildlife populations and to determine if additional wildlife communities might be endangered within the County.

Criteria for Determining Primary Value Fish and Wildlife Areas

1. Habitat containing or supporting "rare and endangered" species as defined by the State Fish and Game Commission.
2. All perennial stream and their tributaries.
3. San Francisco Bay marshes, tidelands, salt ponds and open water.
4. Highly productive coastal tidelands and marshes supporting an abundance of invertebrate marine life.
5. Coastal and offshore areas containing breeding and/or nesting sites and coastal areas used by a large number of migratory and resident water-associated birds for resting and feeding.
6. Areas used for scientific study and research concerning fish and wildlife.
7. Reservoirs containing more than fifty surface acres, and adjacent shore habitat.
8. Existing game and wildlife refuges and reserves.

Primary Fish and Wildlife Area Management Policies

1. All development proposals must demonstrate that they will not significantly affect the direct or supportive environment of the primary habitat areas.

The direct removal of prime habitat should be avoided by requiring clustering of uses, where possible, outside prime habitat areas.

2. Prime habitat areas should be preserved by public and/or private management programs.
3. The County should encourage establishment of wildlife refuges for rare or endangered species and support the South Bay Wildlife Refuge.
4. Nesting and breeding areas, including spawning grounds, should be protected.
5. Noise levels and congregations of people and/or equipment should be kept to levels compatible with the affected species.

SOILS AND AGRICULTURE

Soils and Agricultural Findings

1. Successful agriculture is fundamental to open space management and therefore, every effort should be made to solve the problems confronting agriculture in San Mateo County. Agriculture on the Coastside is hampered by high land values and taxes, a shortage of agricultural water, and a shortage of farm labor housing. These problems will have to be remedied to insure the long term viability of agriculture in San Mateo County.
2. Agricultural uses maintain the open space character of the land and preserve future options for the use of the land while providing some financial return to the landowner.
3. On the Coastside where most of the County's agriculture is carried out, much of the land is suitable for some agricultural use. However, intensive agricultural uses are restricted to the major marine terraces and alluvial stream corridors which have high quality soils. Some of the most valuable agricultural land has already been preempted by urbanization within the mid-Coastside area. Most lands not suitable for truck and field crops are suitable for grazing.
4. Successful long term agriculture requires protection from urban encroachment and other inharmonious uses and from illegal trespass.
5. Some crops, such as flowers, are flourishing in the County, while others, especially truck and field crops, are gradually diminishing in amount of acreage and value of output.

6. Information on engineering characteristics of soils is available which, through interpretation, defines the suitability of a number of land uses appropriate to a given type of soil.
7. Much of the San Mateo County Coastside is highly erodable and the Resource Conservation District advises farmers on how to avoid abuses such as overgrazing and other farm practices that contribute to erosion problems.

Soils and Agricultural Goals and Objectives

1. To protect agricultural and other valuable soils from abuse, misuse, or degradation.
2. To stimulate agriculture and an agricultural economy in suitable locations.
3. To maintain a maximum number of options for the future use of soil resources.
4. To protect watershed quality and prevent stream siltation.
5. To encourage the continuance of agriculture for its open space value.

Soils and Agricultural General Management Policies

1. The County should support studies and actions to supply agricultural water to serve agricultural users without providing excess water for inappropriate urban expansion.
2. The supply and quality of farm labor housing should be increased and medical and educational services for farm laborers should be improved. Present efforts to deal with these problems should be intensified.
3. Detailed soils reports should be required as part of public or private environmental impact reports to assure that uses are compatible with soil capabilities. Additionally, environmental impact reports should consider erosion and siltation problems.
4. The County should support further studies for the purpose of maximizing agricultural productivity in San Mateo County, including examination of new crop possibilities.
5. To avoid erosion and sedimentation problems, the County's Grading Ordinance should be revised and the following principles should be observed in all development projects: 1) limiting development to soils suited for that purpose, 2) leaving the soil exposed for the shortest time possible, 3) reducing the velocity and controlling the flow of run-off, 4) retaining run-off on the site to trap sediment, 5) releasing run-off safely to downstream areas, and 6) encouraging natural vegetation along water courses.
6. Animal densities should be controlled to avoid concentration of animal wastes, overgrazing and resultant erosion. Land owners should be encouraged to work with the Department of Agriculture Resource Conservation District and the Agricultural Extension Service.
7. Land assessments for tax purposes should recognize appropriate planning regulations as enforceable restraints. The County should support State legislation which would base assessments for agricultural land on agricultural use potential.

8. The County should work towards obtaining full tax loss subventions from the State to reimburse local taxing districts to the maximum extent possible. These funds should be used to provide Coastside public facilities and programs such as agricultural water and farm labor housing, and urban water and sewer services for Rural Service Centers.
9. The County should support investigation methods of school financing other than the property tax. Studies should be made to investigation methods by which Bayside residents could help provide financial support to maintain the Coastside in open space. The County should encourage measures to provide school tax equalization as mandated by the Priest-Serrano Court decision.
10. The County should support strong planning programs and thereby discourage land speculation. Speculation inflates land values to levels which are often incompatible with agricultural operations.
11. Rural Service Centers should be developed to permit housing for agricultural workers and services for the agricultural economy of the Coastside. County planning programs for Rural Service Centers should be undertaken which incorporate broad citizen input.
12. The County should encourage and develop mechanisms for a continuing dialogue aimed at involving the agricultural community into the planning process. This might be accomplished by establishment of an agricultural advisory committee to the Planning Department and Planning Commission.
13. The County should encourage the State to better maintain and service public beaches. Adequate police protection should be provided to prevent trespassing on private property.

Criteria for Determining Primary Value Soils and Agricultural Areas

1. Areas with the highest agricultural soil classifications Classes I and II, and selected Class III soils suitable for intensive truck crops outside areas subject to immediate urbanization pressures.
2. Areas with lesser grades of soil suitable for specialty crops.
3. Lands intermixed with prime grades of soil which are functionally inseparable from them.
4. Lands which have historically been in agricultural uses and where it can be demonstrated that agriculture is a viable use, such as floriculture.
5. Soils particularly well suited to forestry within climatically suitable areas.
6. Sand dunes and coastal beaches.

Primary Soils and Agricultural Area Management Policies

1. Prime agricultural lands should be protected from conversion to urban and suburban use. This would, in part, be accomplished by incorporating the recently adopted Density Matrix into the Zoning Ordinance, to be applied to open space areas.
2. Agricultural uses should further be protected by prohibiting clustering of development within agricultural preserves and the two designated agricultural districts identified in the Density Matrix.

3. The extent of land coverage or land alterations by structures should be limited in prime agricultural areas, and where possible, structures should not be located on prime soils.
4. Uses other than those ancillary to agriculture should be prohibited in prime agricultural areas.
5. Sand dunes should be preserved in their natural state by prohibiting development and other detrimental activities.
6. Farmers should be encouraged to enter into Williamson Act contracts to reduce tax assessments and guarantee agricultural land integrity for the short term.

MINERAL RESOURCES

Mineral Resources Findings

1. The principal raw materials extracted within San Mateo County, all of which are classed as nonrenewable, are cement, magnesium compounds, crushed stone (sandstone, limestone and granite), sea shells and salt.
2. Moderate quantities of common clay products and sand have been produced.
3. Records indicate that small quantities of petroleum, natural gas, sand and gravel, gems, bituminous rock, potash, mercury, gold, silver and platinum have been found.
4. Sea shells, sand and silt are presently being dredged from the Bay, and salt, bromine and magnesium are being recovered from ocean water. Exploratory operations off-shore of San Mateo County have also begun for submarine gas, oil and heavy mineral or black sand deposits. The possible impact of off-shore resource exploration and development must be given consideration in future planning policies by all levels of government.
5. Since many mineral extraction activities are not compatible with, or are prohibited in urbanized areas, watersheds and other open space areas, there is a pressing need to identify, hasten extraction or preserve resource sites and their surroundings in order to minimize potential conflicts.
6. Like many other minerals, suitable deposits of sand and gravel are somewhat limited. However, the local demand for sand, gravel and rock commodities is based upon construction activity stimulated by growth, rather than upon special qualities and/or rarity of occurrence. Because of their bulk, these commodities can not be moved long distances without incurring prohibitive costs. Rock, sand and gravel operations, due to dust, rock blasting and the movement of heavy trucks, are not compatible with the urban environment and often are not compatible with

other open space values in the natural environment. Problems are created when sand and gravel resources compete with urban or open space values.

7. The encroachment of urbanization has caused some mining operations to be phased out. This, in part, explains why the number of mineral extraction industries in the County has declined.
8. Many extractive activities have severe environmental impacts which could adversely affect open space and conservation goals. These include noise, dust, siltation, removal of natural vegetation, disturbance of habitat, damage to watershed, etc.

Mineral Resources Goals and Objectives

1. To identify and protect significant existing and potential mineral resource areas from encroachment of urban development.
2. To plan for rehabilitation and reuse of mineral extraction areas.
3. To provide consistent extractive and land use controls which would minimize conflicts between mineral extraction activities and urbanization.
4. To minimize the impact of mineral extraction activities on the surrounding natural environment.

Mineral Resource General Management Policies

1. Potential mineral resource areas should be identified with the assistance of the State Division of Mines and Geology, U.S. Bureau of Mines, U.S. Geological Survey, California Division of Oil and Gas, and other appropriate agencies.
2. An inventory of active and potential mineral deposits should be made and means necessary to protect them should be determined.
3. Plans for rehabilitation, enhancement and reuse of mineral extraction areas should be made a condition of any use permit, and the County should adopt ordinances which require protective and restorative measures for extractive activities.
4. New quarrying or extractive activities which produce permanent, large, visible surface scars should be considered incompatible with the goal of maintaining the scenic quality of open space.
5. Potential impacts on open space values, skylines, natural terrain, habitats, etc. should be considered in deciding whether to grant permits and in setting conditions.

Criteria for Defining Primary Value Mineral Resource Areas

1. Lands which have previously produced minerals, currently produce them or have the potential to produce them in the future, providing that mineral extraction would not be in serious conflict with urban uses, and providing that the mineral value has been weighed against critical open space values.
2. Lands which have not previously produced minerals, but where geologic availability indicates that mineral potential exists.

3. Rare or valuable minerals might be produced in the future once economic or legal barriers have been removed.
4. Solid waste disposal sites.

Primary Mineral Resource Area Management Policies

1. Potential mineral resource areas should be protected. One means to achieve this might be to develop a mineral resources zoning district.
2. Solid waste disposal sites should be designated as possible future sites for reclamation of scarce mineral resources and for eventual use as recreational open space.
3. Incompatible uses should not be permitted within the impact area of existing or potential mineral extraction activities.

CULTURAL RESOURCES

ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES

(For historic sites, please refer to the Parks and Open Space Element of the County General Plan adopted in 1969.)

Cultural Resources Findings

1. In the opinion of professional archaeologists, the known sites in the County which have been recorded represent only a fraction of extant sites.
2. During the past 75 years, about half of the known archaeological sites within the County have been destroyed by urbanization, agriculture, vandalism, natural causes, and by extraction of archaeological deposits for use as landfill or topsoil.
3. The significance of a site usually cannot be determined until it has been excavated by a competent professional archaeologist.
4. Because of destruction of many sites, discovery and interpretation of the remaining sites is critical to developing an understanding of the prehistoric inhabitants of the County.

Cultural Resources Goals and Objectives

1. Attempt to locate and record all unknown archaeological and paleontological resources of San Mateo County.
2. Preserve, interpret, and, where feasible, make accessible to the public, the archaeological and paleontological resources of San Mateo County.
3. Preserve archeological and paleontological sites for present and future scientific research and educational programs.

Cultural Resources General Management Policies

1. Comprehensive studies by the San Mateo County Historical Association and institutions of higher learning should be supported by the County to discover unrecorded archaeological and paleontological sites, particularly in areas under pressure for development.
2. By means of environmental impact reports, an archaeological or paleontological survey should routinely be conducted whenever a critical site(s) may exist within a project area.
3. The County should require a permit for excavation or disturbance of any archaeological site. The permit should be based on an outline of the requirements for excavation by qualified professionals.
4. Educational programs should be conducted by local schools in cooperation with programs sponsored by other public agencies.
5. The County should cooperate with local institutions of higher learning (e.g., San Francisco State University) and interested organizations (e.g., San Mateo County Historical Association) to record, preserve, and excavate sites.

Criteria for Determining Primary Cultural Resource Areas

1. Sites which are of outstanding significance on the Peninsula, or in the Bay Area, because of age, size, content, or relationship to other sites.
2. Sites where the value is reinforced by the presence of scenic qualities, an historic structure or site, or forest and water resources.

Primary Cultural Resource Area Management Policies

1. Because the value of a site usually cannot be determined until excavation occurs, sites should be protected through adoption of an ordinance designed to cover the eventuality of discovering a significant site under which purchase in fee or less than fee by the County, or appropriate State or federal agency, could be implemented.
2. The County should provide funds for implementation of No. 1.
3. Efforts should be made to obtain State and/or national register status where appropriate.

SCENIC RESOURCES

Definitions

1. Scenic Areas include those areas within the County of San Mateo which, through a combination of landscape features described in Chapter 10, are determined to be scenic.
2. Scenic Resources are the natural landscape characteristics, features and scenic areas found in San Mateo County which are sensitive to alteration:
 - - Landscape characteristics are the skylines, ridgelines, land and water junctions, rock, vegetative and soil edges and vegetative, soil, rock and water masses forming the macro-scale scenic mosaic of the County.

- - Landscape Features are the unique topographic, vegetative, water and man-made forms, which comprise, along with micro-scale landscape characteristics, the natural scenic environment of San Mateo County.
- 3. Alterations are any modifying activity or project including but not limited to roads and trails, structures, campsites, timber harvesting, signs, public utilities and mining activities.
- 4. Landscape Vulnerability is the extent to which San Mateo County's scenic resources are susceptible to alterations which can be visually perceived.
- 5. Scenic Corridors are the designated scenic roads, trails, bikeways and mass transit routes from which much of the natural scenic environment of San Mateo County is viewed.

Scenic Resources Findings

1. The close proximity of the County's scenic resources to the urbanized area highlights their visual contrast and demonstrates the importance of the County's scenic resources to urban residents of the County and to the entire Bay Area.
2. San Mateo County's scenic resources are relatively fragile as they are susceptible to alterations which may destroy the resources themselves or obscure them from public view in perpetuity. This is primarily due to their close proximity to intense regional urbanization.
3. Additional means of preserving scenic resources through governmental regulation should be explored. Scenic preservation controls for the Skyline Boulevard scenic corridor including architectural and site planning guidelines have been adopted; however they are in need of refinement and absorption into the County Zoning and Land Division Codes.
4. The County has not previously defined and identified its scenic resources. Those resources should be identified so they can be protected.
5. Scenic resource planning guidelines and policies are needed to determine where and under what conditions alterations to the scenic environment can take place without destroying scenic landscape characteristics and forms.
6. Protection and preservation of scenic resources not only depends on County land use policy and control, but also upon private citizen commitment to maintenance of the scenic character of the County.
7. The maintenance of the County's scenic and open space resources have definite economic value since their degradation will inevitably destroy the initial reason for the County's popularity as a living and working environment.

Scenic Resources Goals and Objectives

1. To protect and enhance the natural scenic resources of San Mateo County
2. To encourage private citizen awareness and interest in San Mateo County's scenic resources.

Scenic Resources General Management Policies

1. San Mateo County's scenic resources should be identified and mapped utilizing the procedures outlined in the appendix, Chapter 10, as the first step to assure their preservation.
2. Site design criteria should be incorporated into the zoning and land division code to insure that proposed developments are located, sited and designed to be subordinate to the pre-existing character of the site to the maximum extent practicable.
3. Aesthetic controls should be applied to utility structures, including roadway and building signs, traffic signals, overhead wires and utility poles.
4. Shorelines around bodies of water including lakes, reservoirs, streams, bays oceans and sloughs should be protected and enhanced. Public access to and views from shorelines should be protected. Where possible, the beach to shore viewshed along the ocean to Route 1 should not be obscured by developments.
5. The basic scenic character of forest lands subject to thinning or commercial harvesting should be protected. All logging or thinning should be sensitive to the scenic quality of the County.
6. Programs educating the population regarding the need to protect scenic resources should be encouraged.

Criteria for Determining Primary Value Scenic Resource Areas

1. Areas which contain designated scenic corridors and critical portions of their viewsheds.
2. Areas which contain or are supportive of designated scenic features.
3. Areas which are determined to be Scenic Areas through the procedures outlined in Chapter 10 of this report.

Primary Scenic Resource Area Management Policies

1. Within designated scenic areas, vulnerable grass land areas, and views of scenic areas and features from County corridors should be protected against visible development.
2. Landscape features throughout the County should be retained in a natural state.
3. Designated scenic corridor and public land viewsheds throughout the unincorporated areas of San Mateo County should be mapped as described in Chapter 10 and the guidelines developed and adhered to, to assure their conservation and enhancement. The visual impact of the corridors and of alterations in the viewshed from the corridor should be minimized to assure maintenance of existing scenic character of the County.



Chapter **3**
THE PLANNING CONTEXT

THE PLANNING CONTEXT

I. PHYSICAL SETTING

San Mateo County consists of 454 square miles of land area, bordered by San Francisco on the north, Santa Clara and Santa Cruz Counties on the south and the Pacific Ocean on the west. The County's eastern boundary meets Alameda County in the middle of the southern arm of San Francisco Bay, and 100 square miles of Bay waters are within the County's boundaries.

The San Francisco Peninsula, of which San Mateo County includes the principal portion, is bisected by the Coast Range. Lands west of the range are generally referred to as the "Coastside", and lands east of the range are referred to as the "Bayside" of the County. The Coastside is predominantly rural in character, with limited areas of flat land on the ocean terraces, and vast areas of steep, forested ridges and canyons inland, especially in the South Coastside. The mountain range restricts easy access either to San Francisco or to the Bayside of San Mateo County. The Bayside, with a relatively flat plain bordering San Francisco Bay, and rolling terrain and foothill areas to the west, contains the bulk of the County's urban development. One-hundred ten square miles, 96% of the developed land of the County, is located on the Bayside. The linear development pattern on the Bayside is almost unbroken from San Francisco to the rapidly urbanizing Santa Clara Valley.

The County has a wide variety of micro-climates. The marine climate of the Coastside, shared to an extent by much of the North County, is characterized by cool summers, an abundance of fog or haze much of the year, and relatively high annual precipitation. The South Bayside, roughly from San Mateo to Menlo Park, experiences more of an inland climate pattern, increasing with proximity to the Santa Clara Valley. In this area, there is less fog and more sunshine, particularly in the summer months. Temperatures and precipitation also vary tremendously with altitude. (See The Physical Setting of San Mateo County). These wide climatic variations seem to have had only minimal effect in determining the pattern of urban development in San Mateo County.

II. POPULATION GROWTH TRENDS

Massive urban growth, as measured by population increments, did not reach San Mateo County until the post-World War II era. The peak period of population growth occurred in the 1950's, and began to taper off in the 1960's. By 1969 growth rates had fallen to historically low levels, and remain low today, as shown in Table 1.

Table 1
POPULATION - 1860-1970¹
San Mateo County

Census Date	Population	Average Annual Increase			
		Increase by Decade		by Decade	
		Number	Percent	Number	Percent
1860	3,214	--	--	--	--
1870	6,635	3,421	106.4%	342	7.5%
1880	8,669	2,034	30.7%	203	2.7%
1890	10,087	1,418	16.4%	142	1.5%
1900	12,094	2,007	19.9%	201	1.8%
1910	26,585	14,491	119.8%	1,449	8.2%
1920	36,781	10,196	38.4%	1,020	3.3%
1930	77,405	40,624	110.4%	4,062	7.7%
1940	111,782	34,377	44.4%	3,438	9.7%
1950	235,659	123,877	110.8%	12,389	7.7%
1960	444,387	208,728	88.6%	20,873	6.6%
1970	556,234	111,847	25.2%	11,185	2.3%

¹Source: U. S. Bureau of the Census

Declining growth, in both numerical and percentage terms, first became evident in the first half of the 1960's, a period when both State and regional growth were at peak levels. In this period the County's average annual growth rate was 2.8%, compared with 3.1% for the Bay Area and 3.3% for the State. Neighboring Santa Clara County had a record annual growth rate of 7.1% in this same period. Since San Mateo County, then, as now, had outstanding locational advantages and other highly favorable attributes as a suburban community, a prime cause of declining population growth in the early 1960's and thereafter appears to be the diminishing amount of relatively flat, comparatively inexpensive land available in the County for residential development. By 1960 all but a few large parcels of this type of land had gone into urban development on the County's Bayside, and the predominant pattern in most areas was one of single-family residences on relatively modest-size lots.

A concurrent trend which also reflected the "scarcity" and high cost of residential land, was the beginning of the "apartment boom". Apartment construction, which accounted for 23% of all new units in the 1950's, soared to 57% of all new units in the 1960's, and now stands at around 70% of all units constructed. The trend toward apartment construction in San Mateo County has contributed to a rapidly decreasing household size and resultant decrease in population gain per new unit added. Average household size decreased from 3.24 in 1960 to 2.97 in 1970, and the decline continues.

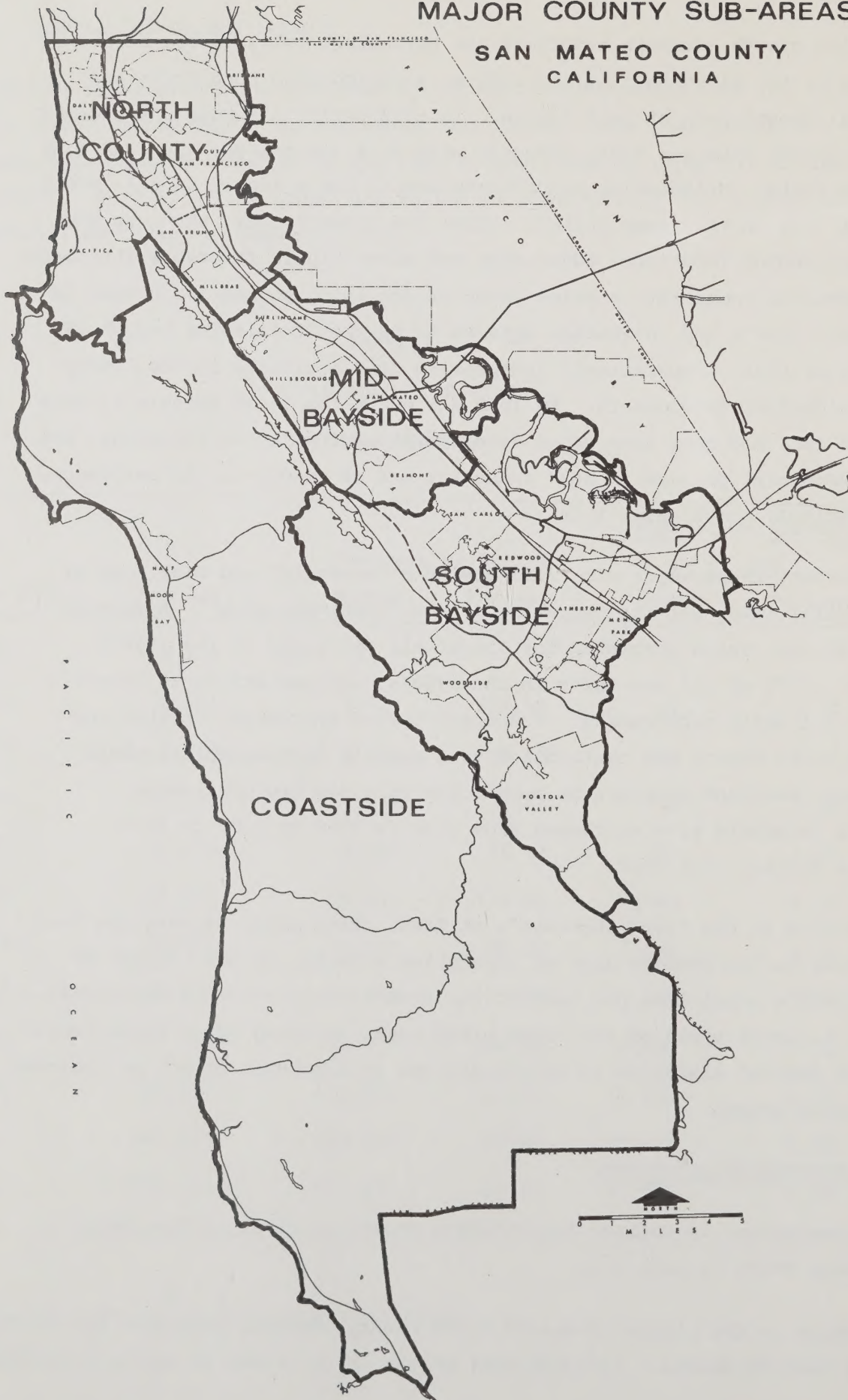
In addition to the "land shortage", at least three other factors are contributing to the slowing down of population growth: 1) The "aging" of the County's population has reduced the size of many existing households. 2) The national trend of declining birth rates is being experienced locally. 3) Reduced migration to California has an important impact on regional and County growth.

III. DISTRIBUTION OF GROWTH

It is convenient to analyze the County's growth in terms of four major sub-areas shown on page 3-4.

Population in the highly-urbanized North County sub-area increased by one-third in the 1960-70 decade. Although most of the large tracts of easily-developable

MAJOR COUNTY SUB-AREAS

SAN MATEO COUNTY
CALIFORNIA

land in the North County are now occupied, there is still considerable development potential in the hills of Pacifica. San Bruno Mountain, presently unincorporated, is the last large expanse of open land in the North County area. However, development proposals are now being formulated by the owners for the relatively level, northern portion of the property.

POPULATION IN COUNTY SUB-AREAS
1960-1970

Sub-Area	Population		Percent Increase
	1960	1970	
North County	164,800	218,100	33.3%
Mid-Bayside	122,450	153,500	25.4%
South Bayside	149,900	172,800	15.3%
Coastside	7,250	12,000	79.3%
TOTAL	444,400	556,400	25.2%

The Mid-Bayside sub-area grew at the same rate as the County in the 1960-70 decade, and steady growth continues in the new bayfront city of Foster City. Further intensification of development is the emerging pattern in the older urban centers of San Mateo and several other communities.

The South Bayside sub-area was characterized by relatively slow growth in the 1960-70 decade, a trend which persists. The Redwood Shores "new community" on the Redwood City bayfront has made a slow start, but may have an urbanization potential comparable to Foster City. Stanford University holds large acreages of unincorporated foothill lands bordering Portola Valley and Woodside, some of which may some day be committed to light industrial and residential development. The balancing of conservation, academic, and development interests in these lands is a continuing concern for the County and the neighboring communities.

Population growth in the Coastside area in the last decade has occurred primarily in the City of Half Moon Bay, which doubled between 1960 and 1970 (from 2,000 to 4,000), and in the adjacent unincorporated areas of Montara, Moss Beach, El Granada, and Princeton, which also approximately doubled in the decade (from 2,300 to 4,800). Together, these contiguous areas contain about three-fourths of the total population of the Coastside. The balance of the 1970 Coastside population of 12,000 was contained in a handful of small unincorporated settlements and on rural farms and ranches scattered throughout the area. Since 1970 the City of Half Moon Bay has added about 1,000 population, and the adjacent unincorporated areas approximately an equal number.

IV. POPULATION CHARACTERISTICS

In the 1960-1970 decade the age composition of the County shifted from the predominant suburban pattern (high proportions of young-to-middle-aged adults and young children, with relatively few "senior citizens"), toward a pattern of an increasing proportion of young adults (aged 14-34), decreasing number of young children, and moderate increases in the ranks of "senior citizens". Continuation of this trend points toward the emergence of a more "adult oriented" population, less tied to child-rearing and other home-centered activities than in the high-growth eras of the 1950's and 1960's. It also points to increased amounts of leisure and mobility, a trend that is enhanced by the relative affluence of many County residents. Median family income reported in the 1970 Census was \$13,222, second highest of all California counties. The percentage of residents in professional, technical and managerial jobs remains high, and over one-third of the adult population has had some college education.

Of course not all residents share in the general affluence and opportunities for leisure enjoyed by increasing numbers of people. Some 8,600 families are at or below the poverty level, and a high proportion of these families belong to minority groups. Nevertheless, increasing numbers of County residents have the time, the resources, the experience, and the familiarity with local issues of open space and conservation to take an active interest in these issues.

V. ECONOMIC CHARACTERISTICS

The growing local employment base in San Mateo County is a comparatively recent development. Prior to World War II the County's major "industrial" area was located in the North County, typified by the steel mill and meat packing firms that had moved out of San Francisco. In the mid-1950's, faced with burgeoning population expansion and seeking a suitable "tax base", many Bayside cities were persuaded to accept, indeed to encourage, the location of "clean", light industry within their borders.

Trade is the largest employment category in the County, and wholesale trade alone accounts for some 14,000 jobs. The North County area in particular has taken on the role of an important regional distribution center, a role which it is well equipped to play by virtue of its location and proximity to major regional transportation arteries.

Transportation, communications, and utilities is the second largest employment category, with some 30,000 jobs. About eighty percent of these jobs are located in and around San Francisco International Airport, and the Airport is a dominant urbanizing influence in the northern Peninsula.

Manufacturing employment has stabilized at around 29,000-30,000 over the past decade, with the major growth occurring in other groups. Nevertheless, manufacturing activities such as metal fabrication, food processing, and printing are still important industries in the County.

The amount of desirable industrial land is severely limited on the Bayside of the County, resulting in high land prices for the few available "premium" sites. The resulting competitive situation tends to attract firms having the resources to comply with high standards of environmental protection, and to provide amenities which marginal firms could not afford.

A comparatively recent trend in the County is the establishment of major "office parks" in many Bayside communities. San Mateo County's Bayside is considered a "prestige" location for regional headquarters and other offices, uses which are highly compatible with the predominantly residential character of the County and supply local jobs matching the skills of a large segment of the local labor force.

EMPLOYMENT BY INDUSTRY - 1972¹

SAN MATEO COUNTY

Industry	Employment
Total civilian employment	210,000
Nonagricultural wage and salary employment	188,300
Mineral extraction	--
Construction	10,900
Manufacturing	29,600
Food products	2,800
Paper and printing	3,600
Chemicals and petroleum	2,500
Primary and fabricated metals	5,500
Nonelectrical and electrical machinery	10,800
Other manufacturing	4,400
Transportation, communication, and utilities . . .	29,300
Trade	47,600
Finance, insurance, and real estate	8,300
Services	32,900
Government	29,700
Other nonagricultural employment	19,300
Agriculture	2,400

The "rural" Coastside is still a predominantly agricultural area which affords only miniscule opportunities for employment. The comparatively modest amount of urbanization taking form in the Mid-Coastside is not accompanied by a local employment base. Industrial development, even on a modest scale, does not appear to be a likely prospect on the Coastside, due not only to poor access to the area, but also to the remoteness of

¹Source: California Department of Human Resource Development

the Coastside from established industrial and commercial centers in San Francisco, along the Bayside "corridor" of the County, and in northern Santa Clara County. A "recreation" based economy may be possible in certain coastal locales, but for the foreseeable future, at least, the "new" Coastside residents will be commuters. The viability of the existing Coastside agricultural economy in the face of mounting urban pressures is a key issue which must be faced.

VI. LAND CONSUMPTION PATTERNS

About one-fourth of the County's land area is presently devoted to urban development, and ninety-seven percent of the development is located on the Bayside. The Coastside, comprising over half of the total land area of the County, has only about three square miles of developed land, most of it concentrated in the Half Moon Bay Area.

SAN MATEO COUNTY LAND USE - 1970¹ (in square miles)

	Bayside	Coastside	Total
Developed*	103 (55%)	3 (1%)	106 (24%)
Vacant*	83 (45%)	259 (99%)	342 (76%)
TOTAL	186 (100%)	262 (100%)	448 (100%)

It was pointed out in a previous section that there is Bayside "development potential" in relatively flat areas on San Bruno Mountain, Redwood Shores, the Stanford Lands, and some foothill areas, for example. The extent to which these and other vacant Bayside areas will actually be permitted to develop will be determined increasingly by considerations

¹Source: San Mateo County Planning Department, Datafile, Issue LU-1, October 2, 1972.

*"Vacant" includes parklands and golf courses, both developed and undeveloped. "Developed" includes all conventional urban uses, in addition to such low-intensity uses as salt ponds and cemeteries. The total area of the County shown in this table varies slightly from the figure given elsewhere in this report.

of environmental impact and the realization that open land is becoming a scarce and precious commodity on the Bayside. Certainly much less than half of the 83 square miles of vacant land appears to be developable.

As for the Coastside, much of the land is too steep, too fragile, too remote, or has other "problems" that will effectively prohibit or severely limit development of all but a fraction of the area. The County's urban economy is, and will remain, centered on the Bayside corridor. A large "spillover" of urbanization to the Coastside appears unlikely in the foreseeable future.

VII. GROWTH POLICY

The desirability of setting limits to future urban growth in the Bay Area is presently being discussed in many quarters. Several jurisdictions have adopted "growth policies" that set limits to expansion or at least control rates of growth, and the Association of Bay Area Governments has commenced a three-year program to explore consequences for the region of various patterns and rates of urban expansion. In attempting to set the parameters of regional growth to the year 2000, ABAG is suggesting that a regional population level ranging between 6.0 million and 7.5 million be adopted for discussion and study, and that alternatives for distributing sub-regional shares of growth be explored within this range. Within this framework, San Mateo County's year 2000 population could range from 718,000 to 864,000. The State Department of Finance, using different assumptions, has developed a series of year-2000 forecasts for the County ranging from 574,000 to 719,000. The 1960 County General Plan was based on a 1990 population of 800,000, which now appears much too generous, even for a "high" forecast. While it is not true that "anything is possible", it seems evident that the County is faced with a fairly wide range of growth possibilities; and that each option should be examined for its implications for the natural, social, and economic environment of the County.



Chapter **4**
WATER RESOURCES

WATER RESOURCES

I. THE NATURE OF THE RESOURCE IN SAN MATEO COUNTY

A. Introduction

Water is basic to human survival and along with air, fills a human need that cannot be postponed nor an alternative provided. In addition to internal consumption, water is needed for washing, cooking and personal health and hygiene. Plant life is sustained by water being absorbed into the root system and water provides a variety of liquid mediums for the growth of aquatic life. Many commercial and industrial activities depend on water.

Water at all levels of abstraction - from basic survival to aesthetic contemplation, is essential to man and thus must receive major attention in planning for the total environment.

- (1) The Water Cycle - In one sense all fresh water is recycled water. Under proper atmospheric conditions, moisture in clouds coalesces into raindrops and falls to earth. Some of this water is absorbed into the ground and flows slowly as ground water, while some runs off the surface, forming rivers to the sea. Some water is taken up in plant material and evaporates off plant surfaces. Some water joins reservoir waters where additional evaporation takes place. But most flows back to the sea where it is again evaporated into the atmosphere.
- (2) Water Forms - Water as a resource takes a number of forms. Except for tides and currents, San Francisco Bay and the Pacific Ocean are large, static bodies of salt water that provide a moderating influence on climate, an environment for aquatic life and a means of transportation and recreation.

Watersheds, creeks, streams and reservoirs provide fresh water media. The Bay and Pacific Ocean provide harbors, marinas, beaches, and tidal sloughs. Although little is known about them, groundwater aquifers usually exist under valleys and flat land areas.

B. Water Availability

Water is available from a number of sources. Water is pumped or diverted from streams for agricultural use. Ground water is mined for both municipal and industrial use. Municipal and industrial waters are imported into the County from the San Francisco Water Department System.

- (1) Streams and Creeks - The Coastside, consisting of 278 square miles, has 22 separate drainage basins that discharge runoff directly to the Pacific Ocean. The three largest basins are in Pescadero Creek with 81 square miles, San Gregorio Creek with 52 square miles and Pilarcitos creek with 29 square miles. The remaining basins are each less than 12 square miles.

On the Bayside there are 12 basins that discharge runoff directly into San Francisco Bay. The largest of this group is San Francisco Creek whose 38 square mile basin is shared with Santa Clara County. Colma Creek is the next in size with 16 square miles. A map of drainage areas is contained in the Physical Setting of San Mateo County, page 4.

The average annual total runoff from Coastal streams has been estimated at 142,000 acre feet (126 million gallons per day).² Of this amount, Pescadero Creek discharges 31,200 acre-feet (27mgpd) and San Gregorio Creek 19,500 acre-feet (17.5 mgpd).¹ Studies by the Coastside County Water District made on Denniston Creek show that there is a potential for about 2,000 acre feet annual yield. The magnitude of this resource can be appreciated when it is realized that the total average annual runoff on the Coastside is equivalent to 2.3 times the water consumed in the County furnished by the San Francisco Water Department (55,500,000 gallons average daily consumption).³ While it probably would not be economical to develop even half of the water resource on the Coastside, there remains the potential for developing nearly the equivalent amount of water presently being consumed in the County. Surface waters on the Coastside have been developed on the San Pedro Creek by the North Coast County Water District. That agency has a permit to divert 1.6 million gallons per day during the period December to May. Actually, about 700,000 gallons per day or about 15 percent of total demand is diverted. Stream diversions on Denniston Creek are also planned by the Coastside County Water District.

² See references, page 4-34

Bayside streams have generally small watersheds with little potential for providing a water supply. A multi-purpose reservoir on San Francisquito Creek with 3,500 acre feet of storage for water conservation could produce 1,250 acre feet annually (1.1 mgpd).

- (2) Ground Water - Ground water plays a major role in providing water for domestic and agricultural uses. The Coastside as well as the Daly City-Colma-South San Francisco areas depend on ground water. Remote, low-density areas in the County are largely dependent on ground water.

The main source of groundwater is precipitation, which may penetrate the soil directly to the aquifer or may enter surface streams and percolate from these channels to the aquifer. Interception, depression storage, and soil moisture must be satisfied before large amounts of water can percolate to the aquifer. Only prolonged periods of heavy precipitation can supply large quantities of water for groundwater recharge. Reservoir storage can also be released at a rate calculated to saturate the soil and recharge the aquifer.

Geologic conditions determine the path by which water reaches the zone of saturation. If the water table is near the surface, there may be considerable percolation through the soil. Relatively impermeable layers above the water table may prevent such direct percolation. Stream channels which cut through these permeable alluvial deposits offer a path to the aquifer.

Ground water in the coastal area is derived from precipitation which penetrates the marine terraces and alluvial valleys and from surface runoff which penetrates aquifers immediately adjacent to the stream channels or which drains from adjacent hillsides onto the terraces and valleys. Development of ground water as an important water supply source is primarily confined to wells in the marine terrace around Half Moon Bay and aquifers adjacent to stream channels north of Half Moon Bay. South of the City of Half Moon Bay, ground water development is limited to small domestic wells and irrigation wells of minor importance.

Semi-annual measurements of ground water levels in selected wells in the Coastside area have been made for several years. A review of the records of these measurements showed the expected positive correlation between ground water levels and seasonal precipitation. Many wells were at their highest level during the spring of 1958, a year with precipitation of more than 150 percent of normal. Lower ground water levels occurred in the falls of 1959, 1960 and 1961, years of less than normal rainfall.² From 50 acre feet per year in the early 1950's, the historical ground water utilization for urban purposes in the Montara-Moss Beach and Half Moon Bay hydro-graphic areas has increased to average around 250 acre-feet per year over the last decade.

The ground water utilized by the Coastside County Water District is derived from wells in the upper part of Pilarcitos Creek. These wells extend onto the streambed gravels of the creek. The water thus derived is probably subsurface flow of Pilarcitos Creek.⁴

Ground water utilized by the Citizens Utilities Company is derived from wells immediately north of the Half Moon Bay Airport. These wells are relatively deep and have a long history of reliable production.

Practically all domestic uses of water outside of the service areas of the Coastside County Water District and the Citizens Utilities Company are met by small domestic wells. The present utilization of water from these wells has been estimated to be 200 acre feet per year.

Utilization of ground water for irrigation purposes is primarily confined to the Half Moon Bay and Montara-Moss Beach areas. It has been estimated that during the 1962 irrigation season, about 600 acre feet of ground water were utilized in these areas for irrigation purposes. Water sales by the Coastside County Water District from all its sources have shown a steady increase in the past decade. Average annual deliveries in 1963 were 1.2 million gallons, increasing to 3.2 million in 1970 and 4.1 million in 1972. The year 1973 should have an annual average of near 5.0 million gallons.⁴

Data on approximately 150 existing wells shows the average yield factor to be about 2.35 gallons per minute per foot of drawdown per 100 feet of well depth. Production from these wells averaged only 35 gallons per minute. The yields of wells in the Coastal area are too low to allow economical development for larger productions.²

Northern San Mateo County supplements its water needs from ground water. Wells into the aquifer are located as far north as Harding Park Golf Course and extend southeast to Daly City, Colma and South San Francisco. About 15 cemeteries in and around Colma use well water as a source for irrigation. Total water pumped from this aquifer in 1969 was 4,510 million gallons. That portion of the aquifer under Daly City provides 1,800 million gallons annually. Well water meets public health drinking water standards.⁶

Ground water in the south Bayside area is only partially understood and very little is known of the extent of ground water in the upland area. Ground water underlies the alluvial plain area in the Burlingame-San Mateo-Palo Alto area. Use of the ground water is limited due to poor quality. Near Belmont Slough, the ground water is thought to be an extension of the Niles Cove portion of the East Bay ground water unit. See map on page 4-7 showing ground water.

- (3) Reservoirs - Individual farmers on the Coastside have been developing small surface water storage reservoirs for irrigation and stock watering purposes for many years. Over 140 of these reservoirs are in operation in the coastal area. Eight of these reservoirs are formed by dams large enough to be subject to the provisions of the California Water Code. The reservoirs listed below have an estimated firm yield of slightly over 1,800 acre-feet per year.¹ The estimated combined firm yield of existing reservoirs not listed is 600 acre-feet per year.

The San Francisco Water Department owns and operates three reservoirs on the peninsula. These reservoirs are a part of the water system that provides municipal and industrial water to the City of San Francisco and San Mateo County.

MAJOR DAMS IN THE COASTAL
AREA OF SAN MATEO COUNTY²

Dams	Watershed	Capacity (acre-feet)	Drainage Area (sq. miles)	Estimated firm yield (a.f./yr)
Johnston	Arroyo de Leon	30	7.6	30
Pomponio Ranch	Pomponio Creek	256	0.6	150
Lake Lucerne	Arroyo de Los Frijoles	455	4.7	1,250
Bean Hollow #2	same	900	1.4	a
Bean Hollow #3	same	461	1.2	a
Green Oaks #1	Green Oaks Creek	287	1.0	190
Lake Elizabeth	same	113	0.8	100
Coastways	Ano Nuevo Creek	100	0.12	90

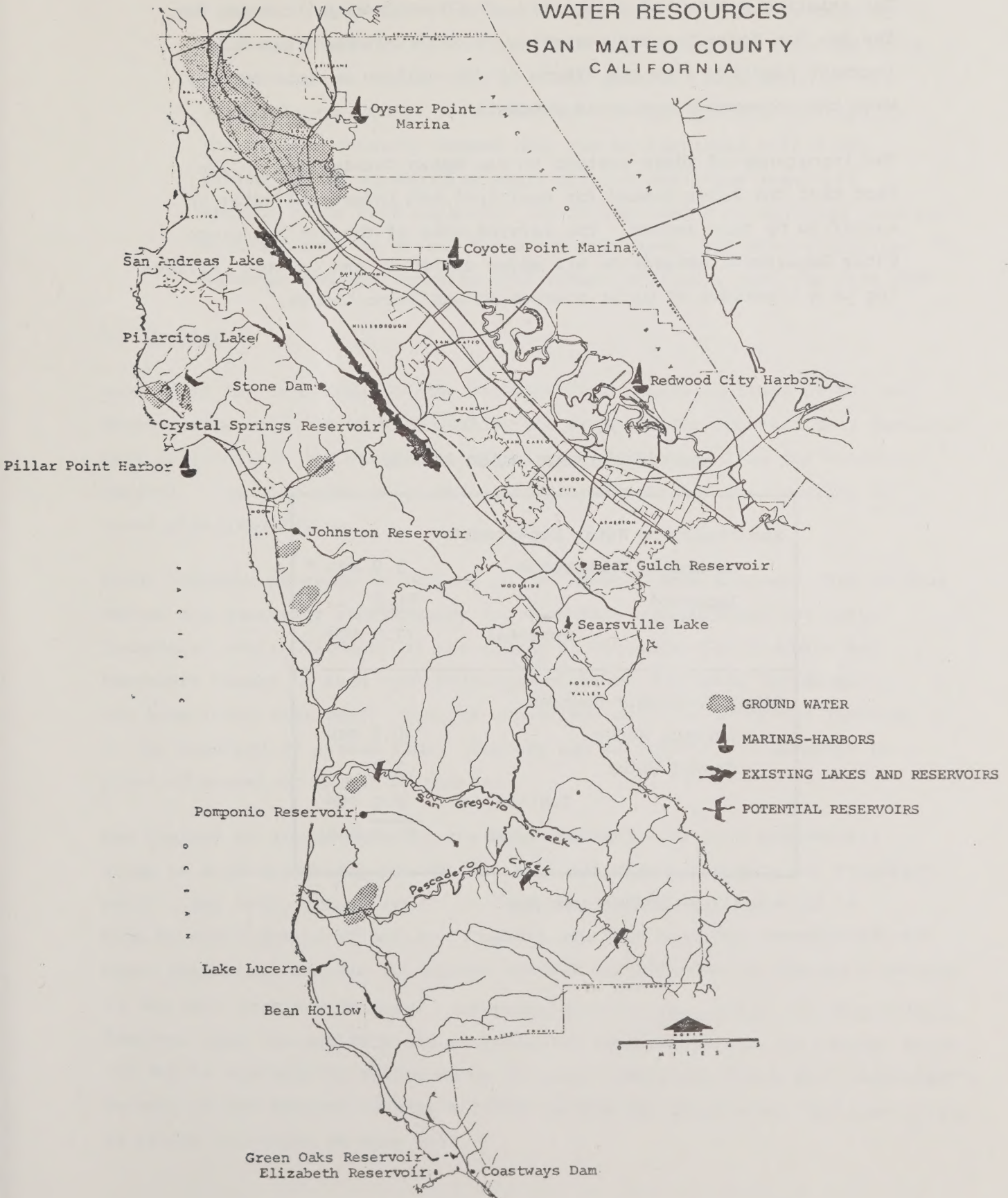
a. Included in yield of Lake Lucerne

This system of reservoirs was started by the Spring Valley Water Company during the period 1864-1888. The company was absorbed by the San Francisco Water Works in 1865 and in turn was purchased by the City and County of San Francisco in 1930. In 1913, major additions to the system were created when construction of the Hetch Hetchy Project was commenced. This project consisted of the construction of O'Shaughnessy Dam in the Sierra on the Tuolumne River and included the construction of a pipe line to the Bay Area.³

COUNTY RESERVOIR SYSTEM

Reservoir	Watershed Area (sq. miles)	Storage Capacity (mg)	Safe Yield (mgd)
Pilarcitos Lake	4	1,010	3.0
San Andreas	7	6,190	unknown
Crystal Springs	25	22,580	2.8

WATER RESOURCES SAN MATEO COUNTY CALIFORNIA



The existing system has a capacity of 270 million gallons per day. The New Don Pedro Dam and Reservoir on the Tuolumne River will increase capacity from the Sierra to 400 million gallons per day when the conveyance system is completed.

The importance of these systems to San Mateo County lies in the fact that the major demand for municipal and industrial water is satisfied by this system. The service area of the San Francisco Water Department extends to all major cities in the County. Following is a breakdown of water sources in San Mateo County.³

SAN MATEO COUNTY WATER SOURCES

San Francisco Water Department	
In-County Reservoirs	5.8 mgd *
Imported	<u>71.2</u>
Subtotal	77.0 mgd
Other In-County Sources	
Surface Water	0.2 mgd
Ground Water	<u>7.8</u>
Subtotal	8.0 mgd
Grand Total	<u>85.0 mgd</u>

* million gallons per day

Demand for imported water has increased from 58 mgd in 1960 to 83.2 mgd in 1970. By the year 2000 the demand for imported water is expected to double over the 1970 demand. Regulation of the Peninsula reservoirs provides that the safe yield be defined as the maximum constant demand that can be sustained over a dry period not to exceed five years without depleting reservoir storage below half capacity. It is expected that holdover storage will decrease as demand for water increases, but that sufficient holdover storage capacity will remain available past the year 2000.

C. Quality

Because of the remoteness of the watershed and mineral content of the soil, Hetch Hetchy water is of high quality and suitable for domestic use, requiring only chlorination for bacterial control and addition of lime for corrosion control. Its high quality is reflected in softness and low quantity of total dissolved solids.

Water sampling programs on streams in the Coastal Area indicate that surface waters are generally satisfactory for domestic, agricultural and most industrial uses. Hardness of the waters in Purisima, San Gregorio and Pescadero Creeks is such that softening might be desirable for domestic and some industrial uses. Quality of surface water is largely a function of the quantity of stream flow. Quality can be expected to increase in years of normal or higher discharges.

The quality of ground water in the San Bruno and Half Moon Bay-Montara areas is considered adequate for domestic use when mixed with San Francisco water. San Bruno ground water is characterized as very hard and is high in total dissolved solids. Coastal aquifers have not experienced salt water intrusion because all marine coastal terrace deposits (except a portion of the Half Moon Bay Terrace) are probably above sea level. It is possible, however, that the aquifers are in hydraulic continuity with the Pacific Ocean and may be intruded by saline water if water levels are drawn down sufficiently. Because of the extreme overdraft (100%) in the San Bruno Area, the possibility of saline intrusion is very real.

Ground water quality in the Pescadero area has been a problem for some years. During years of low flow, recharge of the aquifer has not been sufficient to provide a sustained yield. Also the shallowness of the water table has presented a problem in contamination from septic tank effluent.¹

The following table on page 4-11 compares water quality from various sources to standard quality water as defined by the U.S. Public Health Service and other authorities.

D. Marinas and Harbors

San Mateo County has water on two sides with opportunities for both recreational and commercial use of its waterways. There are three public and two private marinas that provide a total of 993 wet berths. In addition there are a number of private dock facilities in connection with housing projects.⁸

<u>Name</u>	<u>Area</u> (acres)	<u>MARINAS</u>	
		<u>Owner</u>	<u>No. Wet Berths</u>
Coyote Point	17	San Mateo County	475
Oyster Point	80	South San Francisco	285
Redwood City	12	Redwood City	159
Pete's Harbor	2.5	Private	80
Redwood Marina	10.3	Private	96

Coyote Point Marina is part of the park and recreation complex operated by the County at Coyote Point. The 475 berths are protected by a breakwater which encloses 17 acres. The total park area includes 336 acres of water surface. There is a three-lane boat launching ramp, a fuel dock, yacht sales office and the home of the Coyote Point Yacht Club. The approach channel is 100 feet wide and dredged to -8 feet MLLW. Planned expansion includes an ultimate capacity of 920 wet berths.

There are two commercial harbors in the County: Pillar Point harbor located on the coast near Half Moon Bay and the Redwood City Harbor on the Bayside at Redwood City.

The Pillar Point harbor receives some protection from north and northwest wind and waves by the small Pillar Point peninsula. The addition of a rubble

COMPARATIVE WATER QUALITIES

Component		Standard Water*	San Francisco Water 1	Crystal Springs 1	San Andreas	Pilarcitos	Coast Ground Water	San Bruno Ground Water	Coastside Streams
Turbidity Units JTU	Units	5	.5-1.0	2-30	1-3				
Color	Units	15	1-5	1	1-14	0-5			
pH Units		6-8.5	7.0	7.3	7.6	7.7			
Magnesium (Mn)	mg/e	25	.02-0.4						
Sodium (Na)	"	--	1-2.1	6	8.7		60.0%		
Calcium (Ca)	"	43	.9-1.2	11.8	15.1				
Potassium (K)	"	--	.4-.6	1	1.1				
Iron (Fe)	"	0.3	<.006	0.11	0.14				
Manganese (as MnO ₂)	"	0.5	<.002	.006	.003				
Silicon (SiO ₂)	"	--	2-5.1						
Bicarbonate (HCO ₃)	"	--	4.8-5	32.4	44.8				
Carbonate (CO ₃)	"	--	<.001	0	0				
Chloride (Cl)	"	250	<0.5	8.2	13.8	18.0	85		
Sulphate (SO ₄)	"	250	1.0	12	14		42		
Flouride (F)	"	--	0.1-0.3	0.9	1.0				
Nitrate (NO ₃)	"	45	.09-0.2	0.3	0.2		45		
Hardness (Ca CO ₃)	"	**	4.0	39	53	60	206		
Alkalinity	"	400	4.0	26	36	56	174		
Total Dissolved Solids "		500***	---	70			480		270-670
Boron	"	0.5							

*Public Health Service and other authorities

**Hardness 0-60 soft

61-120 moderately soft

121-180 hard

181+ very hard

***1000 mg/e is the start of brackish water. Sea water 35,000 mg/e

mound breakwater by the Corps of Engineers has provided full protection from wind, wave and swells from all quadrants to some 245 water surface acres. There are facilities for mooring 60 boats, a public pier, commercial fish handling and a fuel station. Expansion of the harbor to a 1000 boat marina with a number of support facilities is in the planning stage. Pillar Point Harbor is designated as a harbor of refuge as it is the only protected harbor between Bodega Bay and Moss Landing, a distance of 130 miles.¹⁰

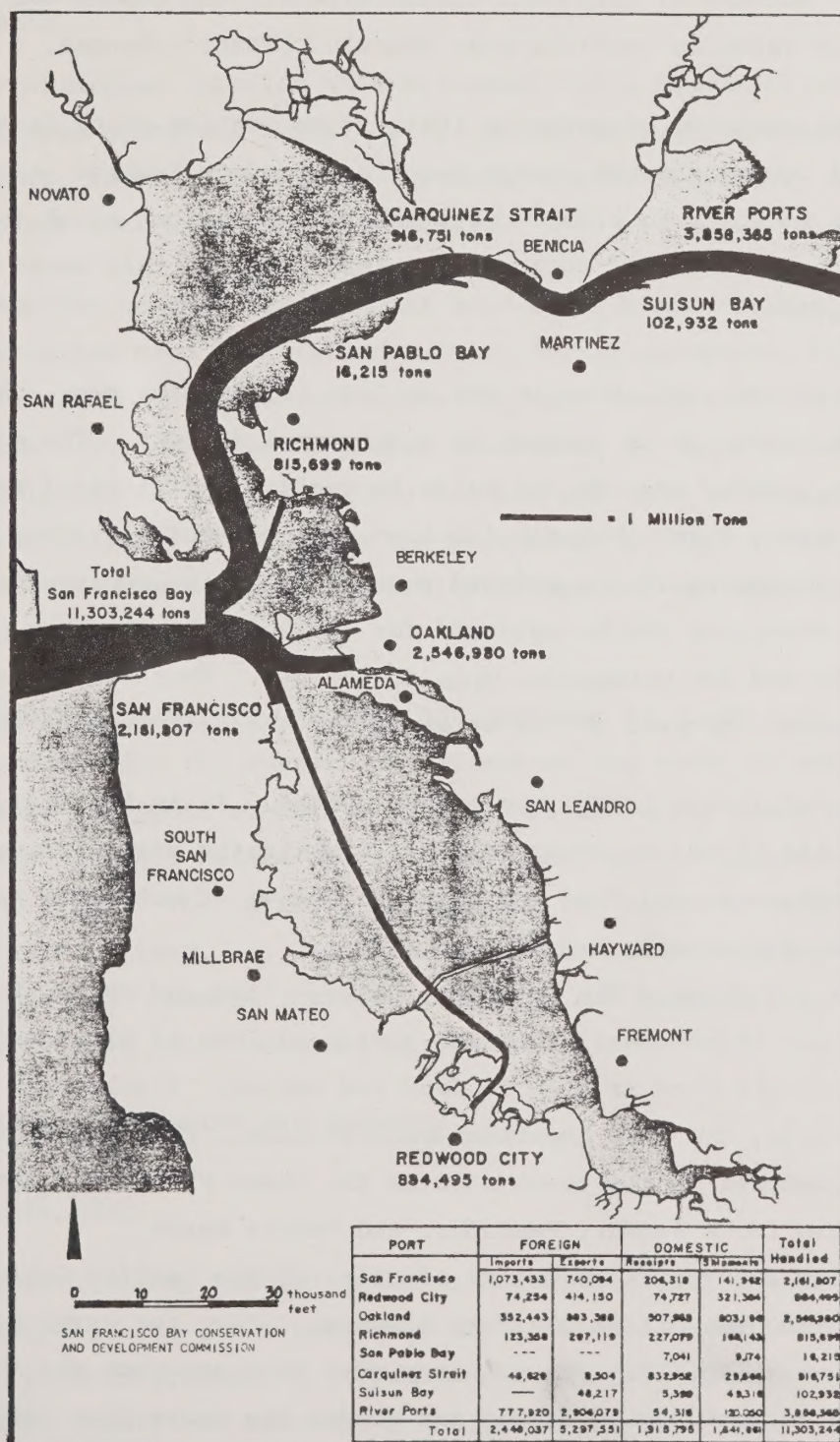
Redwood City Harbor or The Port of Redwood City is the only deep water port in the South Bay. A channel depth of 30 feet permits ocean going commercial vessels to dock. The port handles bulk cargo from its four municipal wharves and two private wharves. The private wharves handle salt and cement. Maintenance of the harbor facilities is the responsibility of local government while outer and inner channel maintenance dredging is conducted by the Army Corps of Engineers. The trend in design of commercial vessel is toward deeper drafts. Increasing channel depths to 35 or 40 feet would increase commercial opportunities for port traffic.⁹

South San Francisco has announced intentions to improve and increase the capacity of Oyster Point Marina. Also, the City of Pacifica has recently announced plans to build a \$5.6 million yacht harbor at Rockaway Beach. which would have a capacity of 345 boats.¹²

The Bayside of the County is laced with watercourses, sloughs and the open water of the Bay. The long fetch of south and southwest winds can make boating in the south bay a wet experience and sometimes dangerous for small craft. It is for this reason and to provide greater opportunities for water oriented recreation that the Regional Planning Committee recommended development of an inland waterways system extending between the two South-Bay bridges to provide greater use of the water resources of the County.

E. Dynamics of the Resource

Water has many unusual properties. It alone occurs naturally on earth in three distinct forms at the same time, as a solid, a liquid and a gas (vapor). Water has a very high heat capacity and can absorb a great amount of heat with a small rise in temperature. Water's heat capacity is so high that it is a standard against which the heat capacities of other substances



DISTRIBUTION OF OCEANBOUND GENERAL CARGO
SAN FRANCISCO BAY - 1965

are measured. Because of this heat characteristic, the oceans and large bodies of water serve as controls over drastic climatic changes.

Another unusual property of water is its surface tension which is the highest of all common liquids except mercury. Surface tension is the ability of a substance to stick to itself or to cohere. Water can stick to solid substances such as rocks and soil. It is this property that makes ground water possible.

A major characteristic of water is its ability to dissolve many substances. Of all liquids known, it is nearest to a universal solvent. The water in oceans, rivers, lakes, springs and wells is really a solution of many substances in ionic form. Water's function as a solvent has added importance because water is generally not changed chemically by the substances it dissolves and therefore can be salvaged for reuse. Water leaches or dissolves salts in the ground and transports them to the sea. When sea water evaporates into the atmosphere as part of the water cycle, the salt remains in the sea.

Water plays a major role in the ecological system. It is the fluid medium that supports all living organisms (biota); its kinetic energy erodes and shapes the earth; water is food and the transporter of nutrients for plant life and oxygen for aquatic life.

- (1) Beach and Shore - The interface between land and water, the tidal and near tidal areas, supports a wide variety of plant and animal life. This band is rich in food and oxygen. Tidal pools teeming with life, are most important biologically. There are several such beaches on the coast such as the James Fitzgerald Marine Reserve (Moss Beach), Pescadero and Pebble Beach.

Winds blowing over thousands of miles of the Pacific Ocean impart energy to the sea in the form of waves. Deep sea waves peak and break, spilling their energy when they approach the shore. The force of this action carves and erodes the shore line into high cliffs, steep beaches, rocky, tidal areas and sandy beaches. Littoral currents transport sand thus formed along the shoreline.

- (2) Streams and Upland Watersheds - The dynamic force of water is displayed in eroding and cutting streambeds movement and grinding of rock and

disposition of sands and silts into deltas and onto the beach. Water along with wind is constantly altering the surface of the earth.

Watercourses provide an environment for a community of widely diverse plant and animal life. Unlike other environmental requirements, water is the least variable or substitutable. All living things must have access to water.

Near the ocean, where streams are wider, broad marshes, lagoons and estuaries have been formed. These low-lying waters, some of which are within the tidal prism are the most diverse of all biological life zones. Because physical conditions in these zones are so variable, the organisms they sustain are able to tolerate such fluctuations. This, plus the provision of many gradations of habitat, makes a great diversity of species and adaptations possible.

Inland streams are narrower but continue to distribute their waters under the surface of valleys at the mouth of streams. These valleys support extensive agriculture and a few small communities. Still further inland the streams continue to support unique flora and fauna. The capacity of the land and water to support life is fully utilized. In the upland watershed these streams support a variety of mammal, reptile, amphibian and bird species as well as associated plant communities.

II. MAN'S INTERACTION WITH THE RESOURCE

A. Beneficial Uses

The State Water Quality Control Board defines beneficial use as follows: "Beneficial use of the water resources of the State is that use of water that is, in general, productive of public benefit, and which promotes the peace, health, safety and welfare of the people of the State". The State Board has adopted a uniform list and description of beneficial uses that might occur in any of the basins of the State. Those that occur in San Mateo County, are as follows:

- (1) Municipal and Domestic Supply - Includes water used in the home or commercial establishments for drinking, food preparation, washing ... etc. and is of high quality.
- (2) Agricultural Supply - Includes crop, orchard and pasture irrigation, stock watering, support of vegetation for range grazing and all uses in support of farming and ranching operations.
- (3) Industrial Service Supply - Includes uses which do not depend primarily on water quality such as mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection and oil repressurization.
- (4) Industrial Process Supply - Includes process water supply and all uses related to the manufacturing of products.
- (5) Groundwater Recharge - Natural or artificial recharge for future extraction for beneficial uses and to maintain salt balance or halt saltwater intrusion into freshwater aquifers.
- (6) Freshwater Replenishment - Provides a source of freshwater for replenishment of inland lakes and streams of varying salinities.
- (7) Navigation - Includes commercial and naval shipping.
- (8) Water Contact Recreation - Includes all recreational uses involving actual body contact with water, such as swimming, wading, water skiing, skin diving, surfing, sport fishing, uses in therapeutic spas, and other uses where ingestion of water is reasonably possible.
- (9) Noncontact Water Recreation - Recreational uses which involve the presence of water but do not require contact with water, such as picnicking, sunbathing, beachcombing, camping, pleasure boating, tidepool and marine life study, hunting and aesthetic enjoyment in conjunction with the above activities as well as sightseeing and open space.
- (10) Ocean Commercial and Sport Fishing - The commercial collection of various types of fish and shellfish, including those taken for bait purposes, and sport fishing in oceans, bays, estuaries and similar non-freshwater areas.
- (11) Fresh Water Habitat - A warm or cold habitat to sustain aquatic life.
- (12) Preservation of Areas of Special Biological Significance - Includes marine life refuges, ecological reserves and designated areas of special biological significance, such as areas where kelp propagation

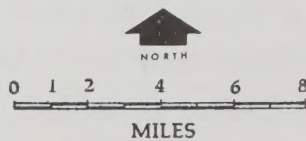
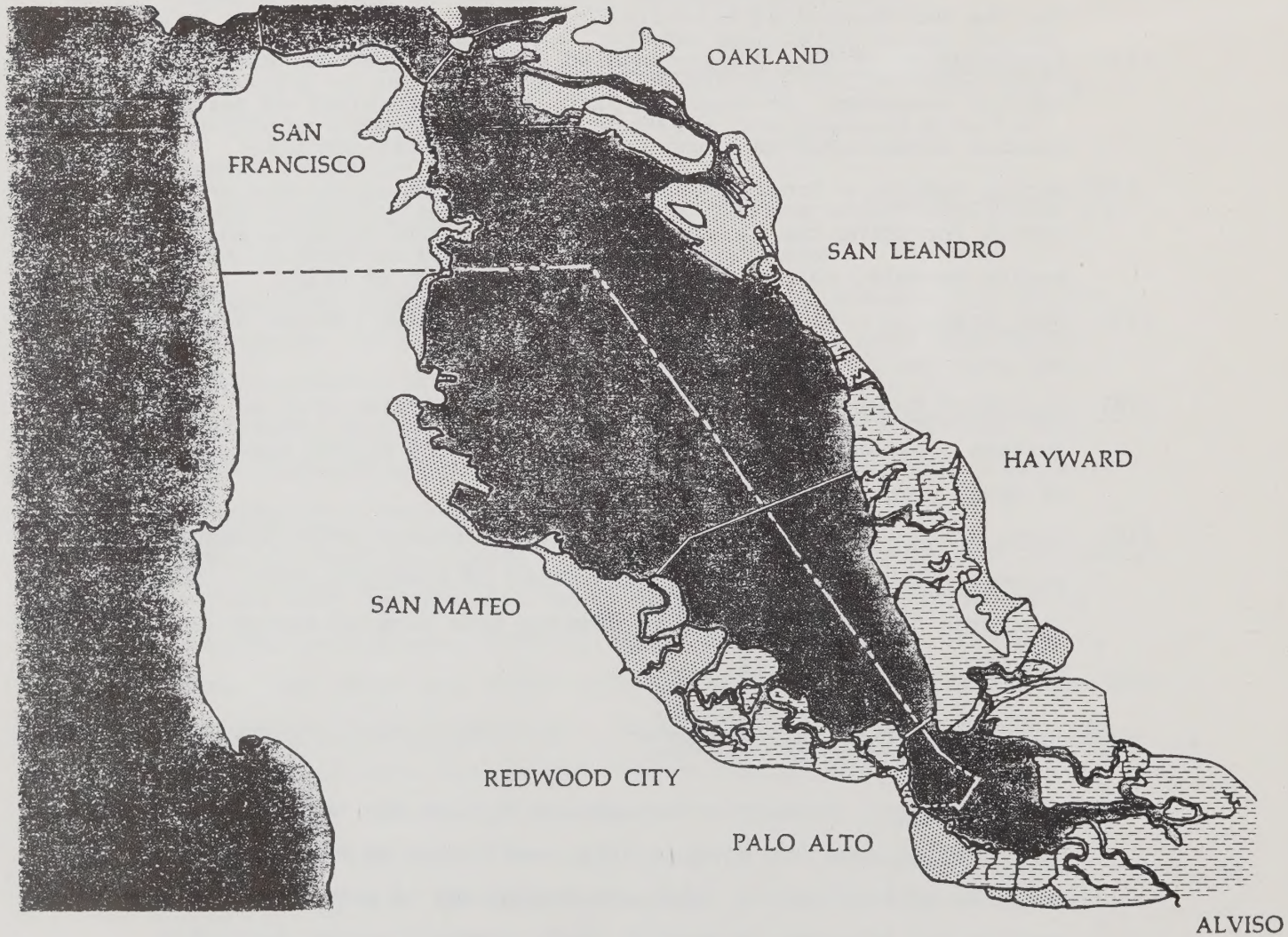
and maintenance is a feature of the marine environment requiring special protection.

- (13) Saline Water Habitat - Provides an inland saline water habitat for aquatic and wildlife resources.
- (14) Wildlife Habitat - Provides a water supply and vegetative habitat for the maintenance of wildlife.
- (15) Preservation of Rare and Endangered Species - Provides an aquatic habitat necessary, at least in part, for the survival of certain species established as being rare and endangered species.
- (16) Marine Habitat - Provides for the preservation of the marine ecosystem including the propagation and sustenance of fish, shellfish, marine mammals, waterfowl, and vegetation such as kelp.
- (17) Fish Spawning - Provides a high quality aquatic habitat especially suitable for fish spawning.
- (18) Shellfish Harvesting - The collection of shellfish such as clams, oysters, abalone, shrimp, crab and lobster for either commercial or sport purposes.
- (19) Hydro-power - The conversion of energy of stored water (potential converted to kinetic) to the generation of electric power. There is little or no opportunity to develop this form of energy in the County.

B. Mismanagement of the Water Resource

- (1) Water Quality - Because water appears to have the ability for self purification, man has historically used bodies of water for the disposal of his wastes. With concentrations of population and a greater use of water in meeting man's physical needs, receiving waters can no longer accept increasing quantities of concentrated waste waters. The result of excessive use is water that is contaminated and can no longer function in a fully beneficial way.
- (2) Bay Fill - Filling of the Bay to acquire flat land for development has reduced the surface of the Bay by thousands of acres. Filling is an irreversible alteration to the water and land resource. San Mateo County has a total area of 553 square miles. Of this amount almost 20 percent or 105 square miles is water. San Francisco Bay makes up the majority of the water area of the County. The bayshore of San

AREAS OF HISTORIC LAND FILL AND DIKING
SAN MATEO COUNTY
CALIFORNIA



□ = 1000 Acres

-  FILLED LAND
-  DIKED LAND
-  MARSH LAND

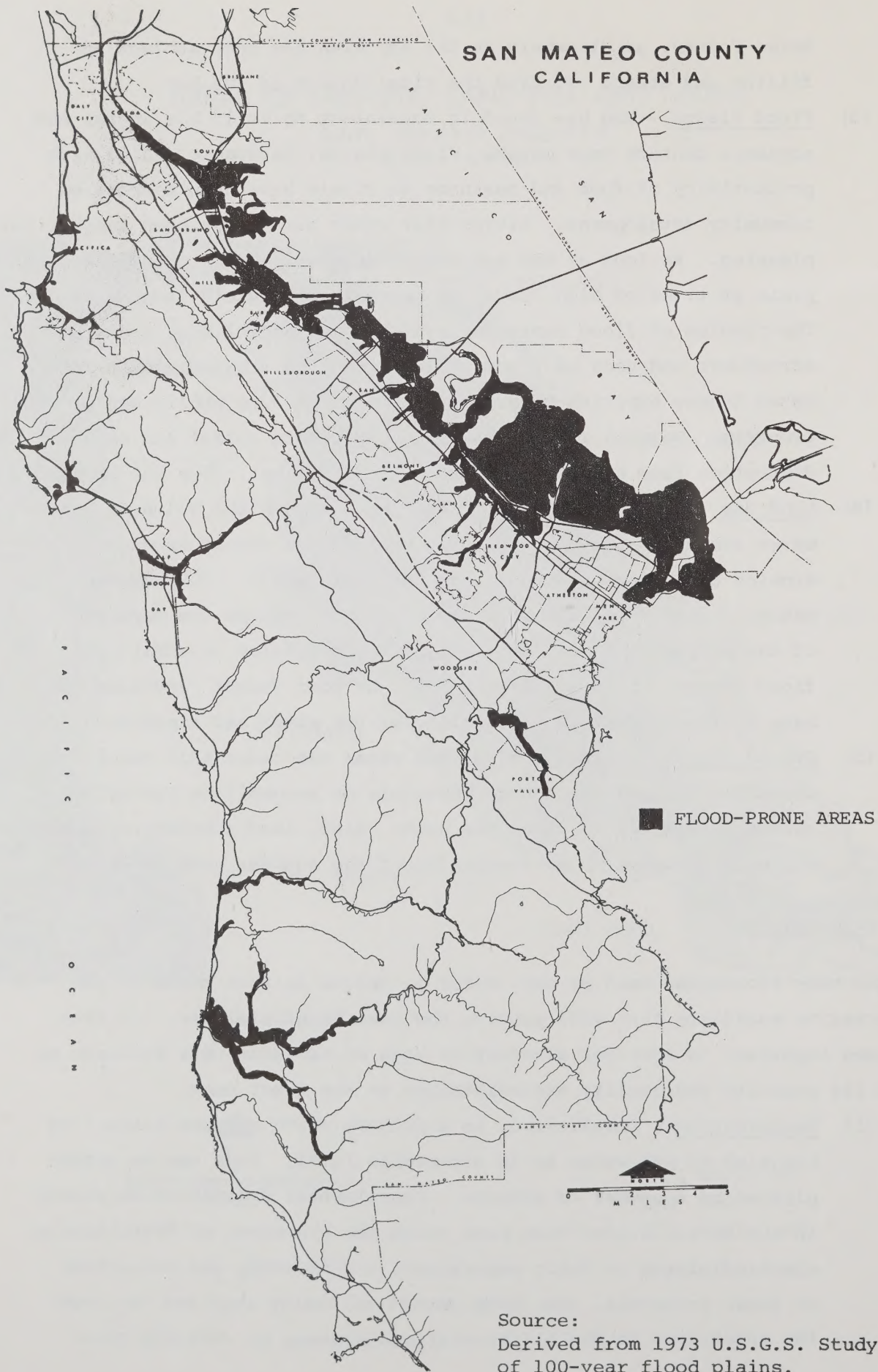
Mateo County, as elsewhere in the Bay Area has been subject to filling and diking off from the tidal waters of the Bay.

- (3) Flood Plains - Man has found it convenient to build his social and economic centers near water. Flood plains, because of their high productivity of food and nearness to rivers have been centers of community development. Living near water has always been aesthetically pleasing. As long as man was mobile and could move out of the flood plain at times of high flows, he was only moderately inconvenienced. The problem of flood damage arises when man establishes permanent structures and uses on flood plains. Some 14 urban areas in San Mateo County experience periodic flood damage to public and private property. Several rural areas also experience social and economic disruption from stream overflow on flood plains. (See map on page 4-20).
- (4) Land Use - Thoughtless use of land can diminish the value of the water resource. Improper grading of land can result in massive erosion and stream sedimentation and aggradation. This misuse not only alters the upstream watershed but reduces the capacity of the stream to carry flood waters which results in additional flood damage. Fire on the watershed or poor forest practices can have similar impact on the quality of the water and riparian habitat.
- (5) Ground Water - Overdraft of ground water can cause salt water intrusion, making the source unuseable or necessitate costly re-charge operations to repel the salt. Also, land subsidence causes structural damage where overdrafts of the aquifer have occurred.

C. Alternatives

Of the many substances used by man, water is unique in that there is no alternative substance that will provide the same beneficial use. It then becomes important to consider alternative ways of managing this resource so that its quantity and quality are maintained at the least cost.

- (1) Desalination - Desalination is a process which reduces salts from brackish or sea water to an acceptable level. This can be accomplished by a number of methods. Experimental demonstration plants in the United States have been using the processes of distillation, electrodialysis or ionic separation, and freezing and variations of these processes. The large amount of energy required to cause the separation in the electrodialysis process is directly pro-



portional to the salt concentration. Cost of desalination is complex depending on the salt concentration of the raw water source, cost of energy, value of power and the problem of disposal of the residual brine.

- (2) Wastewater Reclamation - The reclamation of wastewater has the potential of solving two major problems at the same time, increasing the quantity of water available for beneficial use without the capital costs for water development projects and eliminating to some degree, the discharge of pollutants into the environment. Treated wastewater has been used for a number of years for non-consumptive uses such as irrigation.

The primary and secondary treatment of domestic wastewater removes suspended matter by a number of physical processes, and removes organic matter by biological treatment. Numerous advanced or "tertiary" treatment processes are designed for the removal of specific substances after initial treatment. There are three basic processes: biological, chemical and physical. The cost of tertiary treatment varies widely due to the varying quality of the wastewaters studied. South Lake Tahoe plant costs for tertiary treatments are about \$49 per acre-foot. The total cost of reclaimed water is estimated to be in the range of \$70 to \$90 per acre-foot. The cost to introduce wastewater back into the water system would exceed \$100 per acre-foot. Wastewater would not be totally recaptured and there would be the added cost of disposal of residual waters.³

Direct recycling of wastewater back into the water supply system is not yet technically feasible and would probably encounter public resistance. Where groundwater depletion and salt water intrusion are of major concern, the injection or percolation of reclaimed water into the ground water supply system may be an economic and practical reuse of treated wastewater.

- (3) Projected Changes in Use - Projected increases in water demand are related to two factors--an increasing population, and increased consumption per capita. Per capita consumption varies widely within

the County. The Coastside, due in part to climate, used water at the rate of 85 to 100 gallons per capita per day in 1970, while some areas on the Bayside exceeded 280 gpcd, and the County average was 130 gpcd. It is estimated that by the year 2000 the gpcd rate will vary within the County from 125 to 315 with a County average of 170 gpcd. The total gross consumption is expected to increase from 85.6 million gallons per day to 166.5 million gallons per day in the year 2000 or an increase of 94.5%³. These estimates were made prior to the 1970 census. Earlier projected population growth is not being realized and these earlier estimates of water demand may be overstated.

As discussed above, the wider use of reclaimed wastewater should be anticipated in the years ahead.

III. EXISTING CONTROLS OVER WATER RESOURCES

The following governmental agencies exert the major influence in the planning and control over water resources in the San Francisco Bay Area and in San Mateo County.

A. Federal Agencies

- (1) Corps of Engineers - All physical alterations to land below mean higher high water adjacent to a body of water are subject to the granting of a permit.

Application for permits may be subject to a public hearing, (Rivers and Harbors Act 1899). Permits, by this definition, are required for any filling of the bay or adjacent land below MHHW. Also included are dredging operations and spoil disposal. In the San Francisco Bay Area the permit procedure usually does not begin until prior approvals have been granted by BCDC.

The Corps of Engineers, while having no police power, does provide engineering services and administers Federal funds for the correction of flood problems, water supply reservoirs, water oriented recreation, beach erosion, channel and harbor dredging for navigation, and flood plain management programs that do not involve structural solutions.

- (2) Soil Conservation Service - The Soil Conservation Service, an agency within the Department of Agriculture, has as its primary mission to insure the conservation and wise development of our land and water resources through a variety of programs that are fact finding and advisory in character. Public Law 566 authorizes SCS to undertake flood control projects. The Financial and Technical Assistance program provides engineering services to individuals and local governments for small agricultural projects and local governments for small agricultural projects such as retention ponds, farm roads, domestic water supply, and sewage disposal. Grants-in-aid up to 80 percent of the project cost can be arranged.
- (3) U. S. Geological Survey - This agency has no regulatory powers, but is a fact-finding agency. The agency prepares reports on ground water, erosion and siltation, and major flood discharges. It prepares yearly reports on stream runoff.

B. State of California

The State of California, through the Office of Secretary of Resources, has a number of agencies that provide planning and regulate the water resource in San Mateo County. The following annotated organization chart briefly outlines the agencies concerned with water resources: (See page 4-25)

- (1) Department of Water Resources - constructs and operates the State water resources development and conveyance systems, makes loans and grants to local agencies for water development; conducts studies of the water resources of the State; funds State share of flood control projects; and assists Regional Water Quality Control Boards. The Division of Dam Safety reviews the design of proposed dams and examines existing dams for safety.
- (2) State Water Resources Control Board - supervises the Regional Water Quality Control Boards in the development of information relative to water quality and pollution control; administers federal and State grants for water pollution control projects; provides long range planning for water quality control; administers water rights through application, permit and license procedures.
- (3) Department of Navigation and Ocean Development - was responsible for the preparation of the California Comprehensive Ocean Plan and is still responsible for Beach Erosion Control programs of the State. The agency

conducts studies of the need for boating facilities and makes loans and grants to local government agencies for the construction of such facilities. It also develops boating regulations, and conducts boating safety and boating law enforcement programs.

(4) Bay Conservation and Development Commission - BCDC - The State

Legislature has given the Bay Commission three major responsibilities:

- a. To regulate all filling and dredging in San Francisco Bay including all sloughs that are part of the Bay system.
- b. To have limited jurisdiction over substantial development within a 100-foot strip inland from the Bay. Within this strip, the Commission's responsibility is twofold: (a) to require public access to the Bay to the maximum extent feasible, consistent with the nature of new shoreline developments and (b) to insure that existing shoreline property suitable for high-priority purposes such as ports, water-related industry, and water related recreation, is reserved for these purposes, thus minimizing pressure to fill the bay.
- c. To have limited jurisdiction over any proposed filling of salt ponds or managed wetlands (areas diked off from the Bay and used for salt production, duck hunting preserves, etc.).

(5) Coastal Zone Conservation Commission - This agency was approved

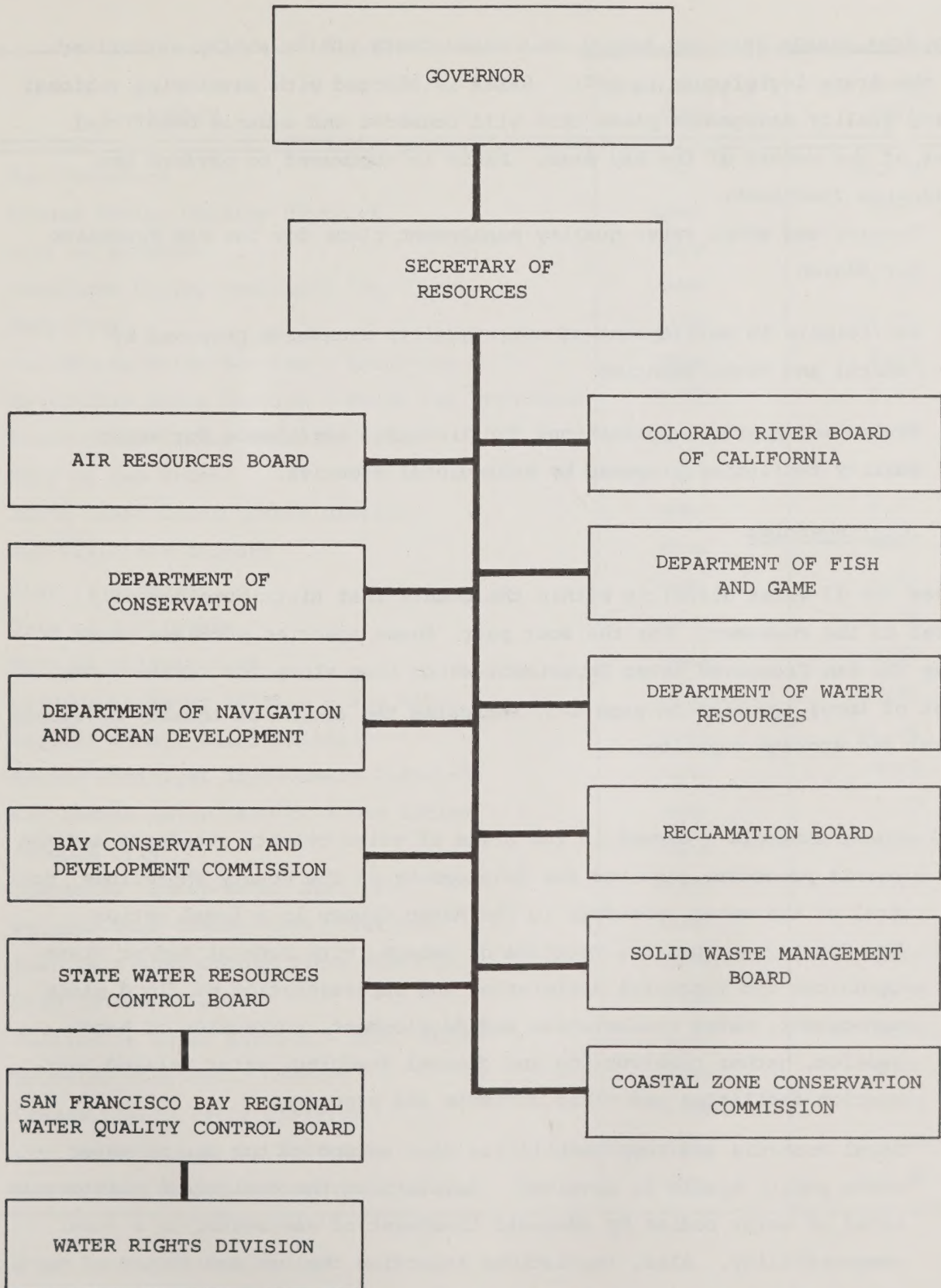
by the voters at the general election in 1972. The act provides for the creation of a State Coastal Zone Conservation Commission and six regional commissions to function between February 1973 and the adoption of a conservation plan by December 1975. The commission is authorized to:

- a. Study the coastal zone and its resources.
- b. Prepare a state plan for its orderly, long range conservation and management, and
- c. Regulate development by a permit system while the plan is being prepared.

C. Regional Agencies

Association of Bay Area Governments - is a voluntary agency that provides research, study, and discussion of mutual Bay Area problems. AB 1846 (1969) charged ABAG with preparing a regional plan covering regional issues such as: airports, regional open space and parks, regional refuse disposal,

STATE AGENCIES CONCERNED WITH WATER RESOURCES



regional housing needs; conservation and development of the Bay shoreline; air quality, water quality, regional transportation and other problems.

Bay Area Sewage Services Agency is a nine-county public entity authorized by the State legislature in 1971. BASSA is charged with developing regional water quality management plans that will conserve and enhance beneficial uses of the waters of the Bay Area. BASSA is empowered to perform the following functions:

- a. Prepare and adopt water quality management plans for the San Francisco Bay Region
- b. Participate in development of water quality standards proposed by Federal and State agencies
- c. Review and approve applications for financial assistance for water quality facilities proposed by subregional agencies.

D. Local Agencies

There are 27 water districts within the County that distribute and sell water to the consumer. For the most part, these agencies purchase water from the San Francisco Water Department which they store for resale. The list of local agencies on page 4-27 indicates the amount of locally developed water and storage capacity.

- (1) Local Controls - Except in the areas of water quality standards and the permit procedure required for development on the County shorelines, control of the water resources in San Mateo County is a local option. The County can sponsor, regulate or manage, with Federal and/or State technical and financial assistance, the implementation of flood plain management, water conservation and development, correction of beach erosion, harbor construction and channel dredging, water related recreation facilities and other controls and programs.

Local controls and responsibilities also extend to the use of water where public health is involved. Maintaining the designated maintenance level of water bodies by adequate treatment of wastewater is a local responsibility. Also, regulations regarding the use and design of septic tanks and the taking of ground water is a local environmental health concern.

SUMMARY OF LOCAL AGENCY SUPPLY AND DISTRIBUTION STORAGE

Agency	Local Supply (mgd) ¹	Storage (mg) ²
San Francisco	--	412.00
Dimond Public Utility District	none	none
City of Brisbane	none	0.15
Guadalupe Valley Municipal Imp. Dist.	none	1.00
Daly City	4.38	10.55
California Water Service - Broadmoor	none	0.25
California Water Service - South San Francisco	1.71	5.60
Westborough County Water District	none	1.62
City of San Bruno	1.51	8.00
North Coast County Water District	none	9.50
San Francisco Airport	none	none
City of Millbrae	none	2.43
City of Burlingame	none	9.71
Town of Hillsborough	none	4.58
California Water Service - San Mateo	none	12.98
Belmont County Water District	none	11.29
Estero Municipal Improvement District	none	4.00
California Water Service - San Carlos	none	3.37
Redwood City	none	15.40
Coastside County Water District	0.15	2.65
Palomar Park County Water District	none	0.07
East Palo Alto County Water District	none	none
City of Menlo Park	none	2.00
California Water Service - Bear Gulch	0.21	6.80
Woodside Oaks Water Company	none	0.30
Canada County water District	none	0.06
Skyline County Water District	none	0.28
Los Trancos County Water District	none	0.40

¹ million gallons per day² million gallons

IV. PROBLEMS AND ISSUES

Management of the water resources in San Mateo County is less than complete. The total management of such a complicated and divergent resource, at best, can probably be controlled and managed only in those areas that are critical to public health and safety and where other important resources such as fish and wildlife and open space and recreation, would be placed in jeopardy. Opportunities for improved management of the water resource do exist in San Mateo County.

A. Domestic Water Supply Systems

The quality of water supplied by local water agencies is constantly monitored and regulated. Permits for the development of a single domestic water supply are issued at the time of approval of the building permit and after an analysis for iron, chlorides and magnesium constituents is made. The development of a water supply to County health standards is also required in land divisions. Once the system is placed in operation the continued quality of the water is the responsibility of the individual property owner. Ground and surface water quality in the County is uneven with particularly low quality in the south coastal area. The potability of ground water has failed to meet health standards in this area due to high iron content and in some cases the lack of quantity. High coliform counts have been recorded which have been caused by the introduction of septic effluent into the soil or long existing but dormant pollutants. This is particularly true of certain areas in the Pescadero Creek basin.

B. Flood Plains

During times of high flow, flood plains are a source of danger to the public health and safety. Flood plain management is that array of engineering and political techniques which provide solutions to the problem. Solutions can range from structures such as upstream reservoirs, channels or bypasses to flood plain zoning, flood proofing or flood insurance. There are a number of areas in the County that flood frequently enough to be considered problem areas. Each is unique in the degree to which urbanization has taken place, in the value of the land, in the varied options for solution and in other variables so that a general policy for all flood plains can not be formulated. However, the degree of flood damage and the impairment of the highest and best use of the flood plain lands is sufficiently great so that it would be

prudent to initiate a comprehensive flood plain management program for each of the flooded areas within the County. The plan would select from among the many techniques for flood plain management those that best apply to the particular flood plain. This would minimize future flood damages, protect the public health and human life and give direction to the proper development and conservation of the flood plains. Because the source and area of flooding can include more than one political entity, flood plain management planning should be conducted in both the unincorporated areas in concert with city governments.

C. Water Supply

Municipal and industrial water supply for the urban centers of the County appears to be assured only to the extent that San Francisco Water Department can and will serve the County for most if not all of the remaining portion of this century. In terms of long-range planning, the option to develop water within the County for beneficial use to supplement future demands should not be preempted. Run-off of rain water on the Coastside is a source for such future development. There are, however, few sites that could structurally accommodate such development. These sites should be identified and only those uses that would not preempt the water development option at some future time should be permitted.

D. Sedimentation

In very recent times, Colma Creek's capacity to carry flood waters has been seriously impaired by the deposition of sediment generated from erosion in the upper parts of the basin. This erosion was credited to extensive grading operations. Similar impacts on other streams can be expected where the serious erodability of soils is not recognized at the outset of grading. The destruction of vegetation by fire can have similar downstream impacts. Grading permits should provide for settling basins or similar means of preventing sediments from leaving the site and polluting streams.

E. Ground Water

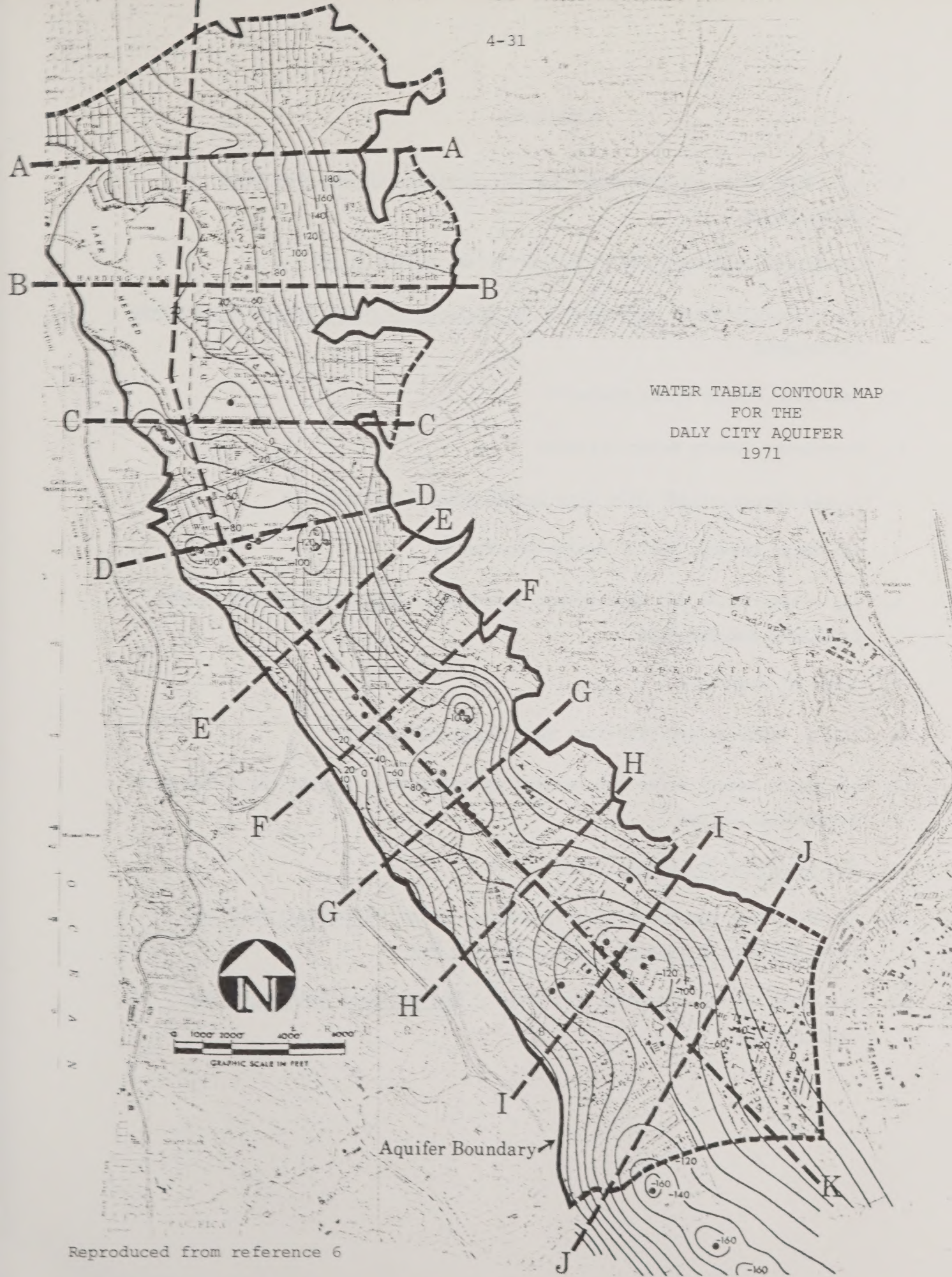
The extent and migration of ground water in San Mateo County is not completely understood. The problems that can be created by a lack of early understanding of the process is illustrated by problems associated with the Daly City Aquifer. Studies made of this aquifer reveal that during a 27 year period (1943-1970), the water table has fallen an average of four feet per year. During the past ten years, the average fall has been six

feet per year. That portion of the total aquifer under Daly City has been estimated to have a safe yield of 186 million gallons while about 1,800 million gallons were removed each year.⁶ At this rate of overdraft, (900 percent) the ground water resource will be depleted in ten to 15 years. The total aquifer is being overdrawn at a rate of about 100 percent. (See map on page 4-31.

In addition to domestic and industrial demands, irrigation is a heavy user of water. San Francisco water as well as ground water is consumed. This suggests that the solution of overdraft might be solved by larger uses of San Francisco water and the recycling of treated waste water for irrigation. Ground water extractions would be limited to the safe yield and used for domestic purposes. San Francisco water would be used to supplement this demand and when mixed with ground water, would improve the quality of the water. Treated waste water would be directly applied for irrigation.

G. Reclaimed Water

It is now socially, economically and technically feasible to use reclaimed wastewater as a supplemental source of water for nonconsumptive use. Wastewater, properly treated, can be used for ground water recharge or directly used for irrigation. The demand for irrigation water in the northern part of the County is high. For example, golf courses and cemeteries in the Daly City area use 1,620 million gallons annually for irrigation. San Francisco parks have used reclaimed wastewater for irrigation of lawns, landscaping, playgrounds and other public areas for many years.



REFERENCES

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2. California Department of Water Resources, Bulletin 138
3. San Francisco Water Department, An Analysis of Water Demand and Systems Improvement
4. Coastsides County Water District
5. Northcoast County Water District
6. Kirker-Chapman-Todd- Daly City Ground Water Investigation
7. San Mateo County, Public Health Department
8. Bay Conservation and Development Commission, Maritime Commerce in the San Francisco Bay Area.
9. Corps of Engineers
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12. San Francisco Chronicle, August 1973
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14. San Mateo County Planning Department. The Physical Setting of San Mateo County.



Chapter **5**

NATURAL VEGETATIVE RESOURCES

NATURAL VEGETATIVE RESOURCES

I. NATURE OF THE RESOURCE IN SAN MATEO COUNTY

San Mateo County has an abundance of natural vegetative types, with an unusual diversity of plants. Both the Oregonian and Californian biotic provinces are represented. Within the unincorporated portion of the County may be found nine of the eleven major vegetative types of California, as classified by Munz and Keck.¹ These classifications can be broken down further into plant communities,² which are represented in San Mateo County as indicated below:

SAN MATEO COUNTY VEGETATIVE TYPES AND PLANT COMMUNITIES

	VEGETATIVE TYPE	PLANT COMMUNITY
I	Strand	Coastal Strand
II	Salt Marsh	Coastal Salt Marsh
III	Freshwater Marsh	Freshwater Marsh
IV	Scrub	Northern Coastal Scrub Coastal Sage Scrub
V	Coniferous Forest	Redwood Forest
VI	Mixed Evergreen Forest	Mixed Evergreen Forest
VII	Woodland-Savanna	Foothill Woodland
VIII	Chaparral	Chaparral
IX	Grassland	Coastal Prairie

1. A California Flora

2. Ibid., p. 13

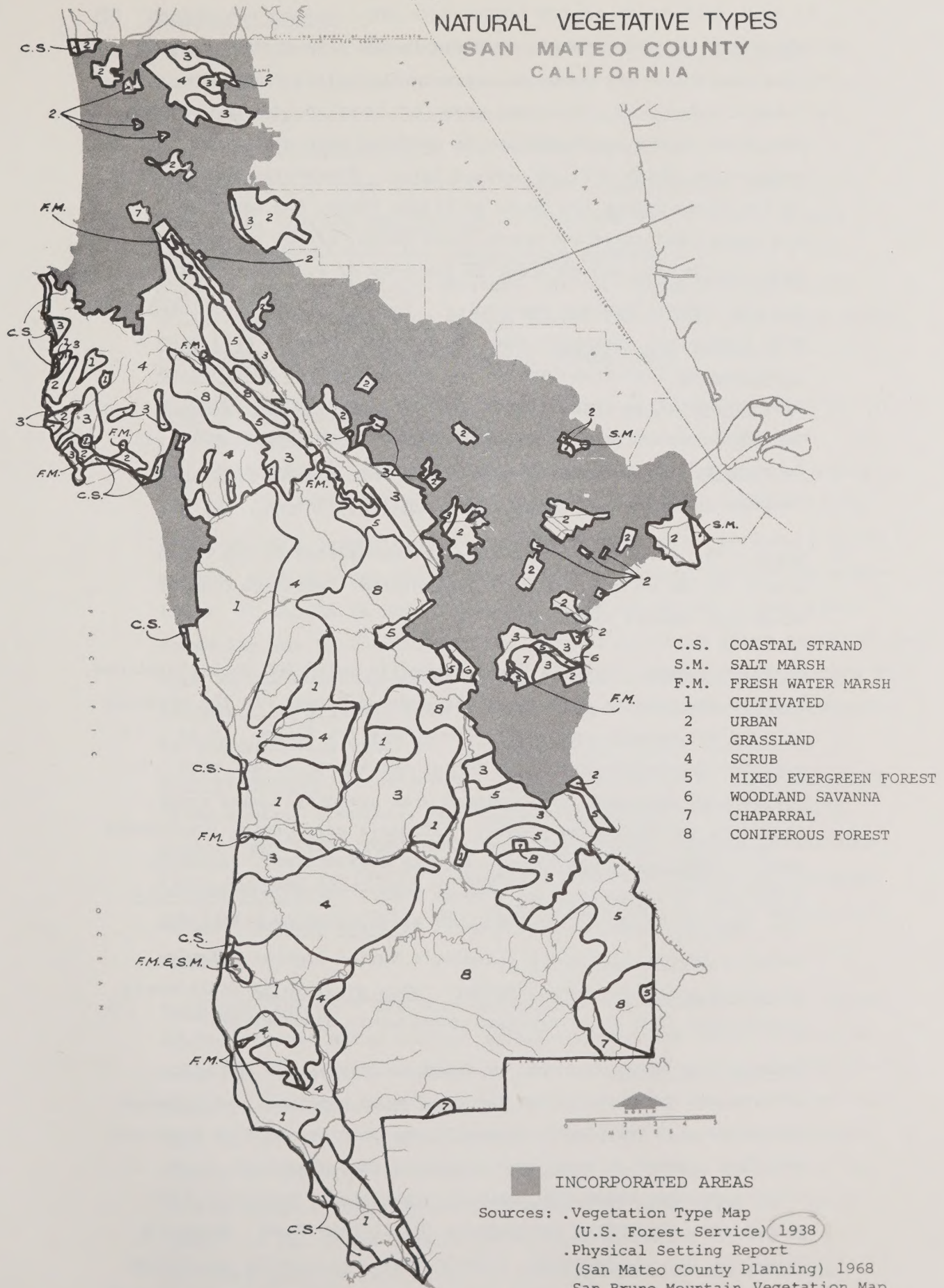
In addition to the foregoing categories, special sub-classifications exist in terms of plant associations, including streambank vegetative groups, coastal marine plants, and serpentine soil assemblies.

A. Vegetative Types and Plant Communities

The locational and taxonomic characteristics of vegetation types and corresponding plant communities in San Mateo County are listed below. A general distribution map for the various vegetative types is found on page 5-3.

- (1) Strand - The Strand vegetation type is represented by only one plant community, Coastal Strand, which is found exclusively on sandy beaches and dunes. Correspondingly, Coastal Strand vegetation is found in a discontinuous pattern from the San Francisco County line southward, including Montara Beach, the Half Moon Bay beaches, Franklin Point, and Ano Nuevo Point. This type of vegetation typically is low-growing or prostrate, and is often succulent in nature and late-flowering. This vegetative type is typically represented by the following plants: Abronia latifolia (Yellow Sand Verbena), Artemisia pycnocephala (Beach Seawort), Cakile maritima (Sea Rocket), Convolvulus soldanella (Beach Morning-Glory), Eriophyllum staechadifolium (Seaside Woolly Sunflower), Fragaria chiloensis (Beach Strawberry), Lathyrus littoralis (Silky Beach Pea), and Mesembrianthemum chilense (Sea Fig.).
- (2) Salt Marsh - The Salt Marsh vegetation type is represented solely by the Coastal Salt Marsh plant community, and is limited to the salt marsh areas. Thus, incidence is limited to the lower end of Pescadero Creek Marsh, and along the tideland margin of San Francisco Bay from sea level to an elevation of 10 feet (not to be confused with Coastal Marine plant groups). This vegetative type is typefied by the following: Distichlis spicata var. stolonifera (Salt Grass), Frankenia gradiflora (Alkali Heath), Grindelia humilis (Marsh Grindelia), Polygonum patulum (Knotweed), Potentilla egedii var. grandis (Pacific Silverweed), Salicornia pacifica and S. virginica (Pickleweed), Senecio hydrophilus (Alkali Marsh Butterweed) and Spartina foliosa (California or Pacific Cordgrass).

NATURAL VEGETATIVE TYPES SAN MATEO COUNTY CALIFORNIA



Sources: .Vegetation Type Map
(U.S. Forest Service) 1938
.Physical Setting Report
(San Mateo County Planning) 1968
.San Bruno Mountain Vegetation Map
(Vogley & Hill) 1973
.Flora of the San Francisco
Watershed (Oberlander) 1953

- (3) Freshwater Marsh - Freshwater Marsh is the term applied to both this vegetative type and its corresponding plant community. Located principally along the edges of lakes, ponds, and streams, the plant community should not be confused with streambank vegetation, which will be covered later. Freshwater marshes in San Mateo County are found at Pillar Point, San Gregorio, the upper reaches of Pescadero Creek Marsh, around several man-made reservoirs, and adjacent to portions of Pilarcitos Lake and the Crystal Springs Reservoirs. Typical plants associated with this plant community are: Carex spp. (Sedge), Epilobium franciscanum (San Francisco Willow Herb), Lupinus polyphyllus var. grandifolius (Large-leaved Lupine), Lythrum hyssopifolia (Hyssop Loosestrife), Polygonum coccineum (Swamp Smartweed), Ranunculus lobbii (Lobb's Water Buttercup), Scirpus spp. (Bulrush or Tule), and Typha latifolia (Cat-tail).

- (4) Scrub - The Scrub vegetation type is represented in San Mateo County by two of the six plant communities: Northern Coastal Scrub and Coastal Sage Scrub.

Northern Coastal Scrub is found generally below 500 foot elevations, between the Coastal Strand and the Redwood Forest, in the northern area of the County, especially around Devil's Slide. It is typified by plants which grow rather densely to 6 feet with Coyote Bush dominant, interspersed with extensive grass areas, including the following plants: Artemisia californica (California Sage), Anaphalis margaritacea, (Pearly Everlasting), Baccharis pilularis var. consanguinea (Coyote Bush), Castilleja latifolia var. wightii (Wight's Paint Brush), Erigeron glaucus (Seaside Daisy), Lupinus variicolor (Lindley's Varied Lupine), Mimulus aurantiacus (Sticky Monkey Flower), Rhus diversiloba (California Poison-Oak), and Rubus ursinus, (California blackberry).

Coastal Sage Scrub is found on drier coastal bluffs and hills, often where there is a high degree of wind exposure, and adjacent to chaparral. The plants generally are only one to five feet tall and form a somewhat more open community than chaparral, with California Sage being the dominant vegetation. Representative plants are: Artemisia californica (California Sage), Baccharis pilularis var. consanguinea (Coyote Bush), Eriogonium latifolium (Coast Eriogonium), Horkelia californica (California Horkelia) and Rhus diversiloba (California Poison-Oak).

- (5) Coniferous Forest - The Coniferous Forest vegetation type is represented by the Redwood Forest plant community in San Mateo County (one of nine plant communities in this vegetative type). It encompasses heavy, dense forests, with trees up to 350 feet, occurring predominantly on the seaward slopes of the County. Typical taxa in this community include: Lithocarpus densiflora (Tan Oak), Myrica californica (California Wax Myrtle), Oxalis oregana (Redwood Sorrel), Pseudotsuga menziesii (Douglas Fir), Rhododendron occidentale (Western Azalea), Sequoia sempervirens (Coast Redwood), Trillium ovatum (Coast Trillium), Vaccinium ovatum (Evergreen Huckleberry), and Viola sempervirens (Redwood Violet).
- (6) Mixed Evergreen Forest - The Mixed Evergreen Forest vegetation type is represented solely by a plant community of the same name. It generally occurs along the drier inland margins of Redwood Forests, and at higher elevations within same. In terms of growth habit, trees in this community grow to 100 feet or more, in fairly dense stands, with a brush understory and interspersed patches of grass-land. It should be noted that the Mixed Evergreen Forest plant community can be subdivided into several distinct plant associations, such as oak-madrone, oak-buckeye, tan-oak, madrone, and Douglas fir-tanbark. In general, however, this plant community is represented by the following species: Aesculus californica (Buckeye), Arbutus menziesii (Madrone), Clarkia purpurea ssp. quadrivulnera (Four-spotted Godetia), Fritillaria lanceolata (Mission Bells), Lithocarpus densiflora (Tan Oak), Pseudotsuga menziesii (Douglas Fir), Quercus agrifolia (California Live Oak), Rhus diversiloba (California Poison-Oak), and Umbellularia californica (California Laurel)
- (7) Woodland-Savanna - The Woodland-Savanna vegetation type is represented, in San Mateo County, by only one of its three plant communities: Foothill Woodland. This community is characteristically found in foothills and along valley borders at elevations of 400 feet to 3000 feet, and occasionally to 5000 feet on warm slopes. Growth is typified by trees of 15 feet to 70 feet in height, in either dense or open groves, interspersed with brush and grass-land. In San Mateo County, this plant community occurs in a discontinuous pattern along the eastern hill faces, from the Crystal Springs area south. Typical plant species include: Aesculus californica (Buckeye), Galium nuttallii (Climbing Bedstraw),

Heteromeles arbutifolia (Toyon), Pedicularis densiflora (Indian Warrior), Phoradendron villosum (Oak Mistletoe), Quercus agrifolia (California Live Oak), Q. Douglassii (Blue Oak), Q. kelloggii (California Black Oak), Q. lobata (Valley Oak), Stipa lepida (Small-flowered Stipa), and Umbellularia californica (California Laurel).

- (8) Chaparral - The Chaparral vegetative type is represented by one sole plant community of the same name. Located primarily on the dry eastern slopes and ridges and steep south-facing slopes of San Mateo County, the vegetation in this assemblage is predominantly three feet to ten feet in height and is dense to the point of being impenetrable. Some typical chaparral plant species are: Adenostoma fasciculatum (Chamise), Arctostaphylos ssp. (Manzanita), Baccharis pilularis (Coyote Bush), Ceanothus ssp. (California Lilac), Eriodictyon californicum (Yerba Santa), Heteromeles arbutifolia (Toyon), Pickeringia montana (Chaparral Pea), Prunus ilicifolia (Holly-leaved Cherry), Quercus dumosa (California Scrub Oak), Rhamnus californica (California Coffee Berry), and Rhus diversiloba (California Poison-Oak).
- (9) Grassland - The Grassland vegetative type is represented in San Mateo County by the Coastal Prairie plant community, one of two within this classification. Coastal Prairie grasslands are predominantly found at elevations below 4,000 feet, on the eastern side of the Santa Cruz Mountains, on the tops of some ridges, and often adjacent to chaparral. Typical plants are: Allium ssp. (Wild Onion), Avena fatua (Wild Oats), Bromus ssp. (Brome Grass), Festuca ssp. (Fescue), Melica californica (Western Melica), Oenothera ovata (Suncups), Sisyrinchium bellum (California Blue-eyed Grass), and Stipa pulchra (Nodding Stipa).
- (10) Streambank Vegetation - Vegetation along small streams is usually representative of the plant material found in the surrounding plant classification.³ However, in the case of the lower courses

3. Thomas, Flora of the Santa Cruz Mountains of California, p. 22

of larger streams, certain water-loving plant species are common, creating a special plant association, as follows: Acer macrophyllum (Big-leaved Maple), A. negundo var. californica (California Box Elder), Alnus oregona (White Alder), A. rhombifolia (Red Alder), Cornus spp. (Dogwood), Corylus californica (California Hazel), Fraxinus latifolia (Oregon Ash), and Salix spp. (Willow).

- (11) Coastal Marine Plants - Within the intertidal and subtidal areas, there exists a diversified plant assemblage known as algae, represented by the following: Fucus distichus (Rock Weed), Halosaccion glandiforme (Sea Nipples), Nereocystis leutkeana (Bull Kelp), Macrocystis pyrifera (Giant Bladder Kelp), Phyllospadix spp. (Surf Grass), Postelsia palmaeformis (Sea Palm), and Ulva spp. (Sea Lettuce).
- (12) Serpentine Soils - The plant association which is indigenous to serpentine soils is unique in its ability to withstand the moderately toxic effects of this soil type. This peculiar and distinctive plant assemblage is typified by the following plants: Acanthomintha obovata ssp. duttonii (Dutton's Thorn-mint), Cirsium fontinale var. fontinale (Fountain Thistle), Lessingia spp. (Lessingia), Quercus durata (Leather Oak), and Mimulus douglasii (Purple Mouse Ears).

B. General Description of Vegetative Resources

Nearly all of the natural vegetative types have experienced some modification through man's efforts to control vegetation, or through his carelessness. Early use of fire as a tool to remove the brush from land intended for cultivation has resulted in a modified brush type in some locations which are tolerant of fire. It is known that the redwood forest type is a "fire sub-climax" which means that in the absence of fire or a reasonable substitute for fire the true climax species will be something other than redwood. The heavy grazing of what was a natural grassland has resulted in the need to seed and fertilize to provide feed for cattle, thus altering the natural vegetation.

In some areas of the County, what appears to be natural vegetation is not natural nor even native to this region. The magnificent stands of eucalyptus trees found throughout the County were planted many years ago and are now self-perpetuating due to the fact that they are well suited to this region. Some plantings of Monterey pine for Christmas trees were abandoned and are now reaching maturity.

For the purpose of this discussion, natural vegetation includes sub-climax and climax plant communities or associations found in the County which have not been significantly altered by man's activities. This definition would result in approximately sixty percent of San Mateo County being classified as having natural vegetation.

Most of the areas containing natural vegetation are in private ownership. The County and State own and control significant acreage in park lands. Most publicly-owned lands are confined to the redwood forest type; however, a significant number of the beaches on the coast are publicly owned and some of these lands include vegetation characteristic to sand dunes. The largest single ownership within San Mateo County is the Crystal Springs Watershed owned by the City and County of San Francisco. This watershed land is almost entirely covered with natural vegetation and adequate protection of this resource is now provided through various agreements and restrictions.

The availability of the vegetative resource must be considered on the basis of its value. If the vegetation has no economic value to the land owner, then there is an incentive to remove it and put the land to a productive use. The farmer will, at considerable expense, remove brush from his land in an attempt to put the land under cultivation. Since the land is the primary resource, in this context, all the natural vegetation with no commercial value is subject to removal if there is economic gain to be acquired through land conversion and the conversion process does not require governmental approval.

When natural vegetation (e.g., trees) has economic value, it is subject to management or mismanagement through attempts of the landowner to convert the natural vegetation to an economically valuable resource. There is a readily available market for redwood and Douglas fir trees and considerable pressure is brought to bear on landowners to harvest trees. Regulation of

forest management practices is provided by the County through its Timber Harvest Ordinance, and by the State through its new Forest Practices Act. A complete discussion of the County's forest resources is provided in a report entitled: Forest Resources of San Mateo County.

C. Rare and Endangered Plant Species

Within San Mateo County, there are several rare and/or endangered plant species, as well as plants which are rare or unique to San Mateo County. In the first instance, the criteria of the California Native Plant Society have been used in the designation of rare and/or endangered plant species in Appendix I of this report. Thus, all of the species so listed meet the following qualifications:

Rare: Exists in only one or a very few restricted localities; occurs in such small numbers that it is seldom seen or collected, regardless of its total area; and exists only on a type of habitat that is likely to disappear or change for any reason.

Endangered: Is actively threatened with extinction and not likely to survive unless some protective measures are taken.

In addition, there are seven plant species which are found only in San Mateo County, and no other place in the entire world (see accompanying map on page 5-11 for general distribution. In a similar manner, there are 11 plants found only in the Santa Cruz Mountains (including that portion in San Mateo County), and six plant species which are found only in San Mateo County and one adjacent County. These species should be protected because of their very limited habitat areas. Another group of plants in need of special protective measures are those which are rarely found in San Mateo County but which are found in other geographic areas. The importance of these plants lies in the fact that plants which are found outside their general habitat area tend to be atypical in form and growth habit, and thus are unique. Five plants fall into this latter category.

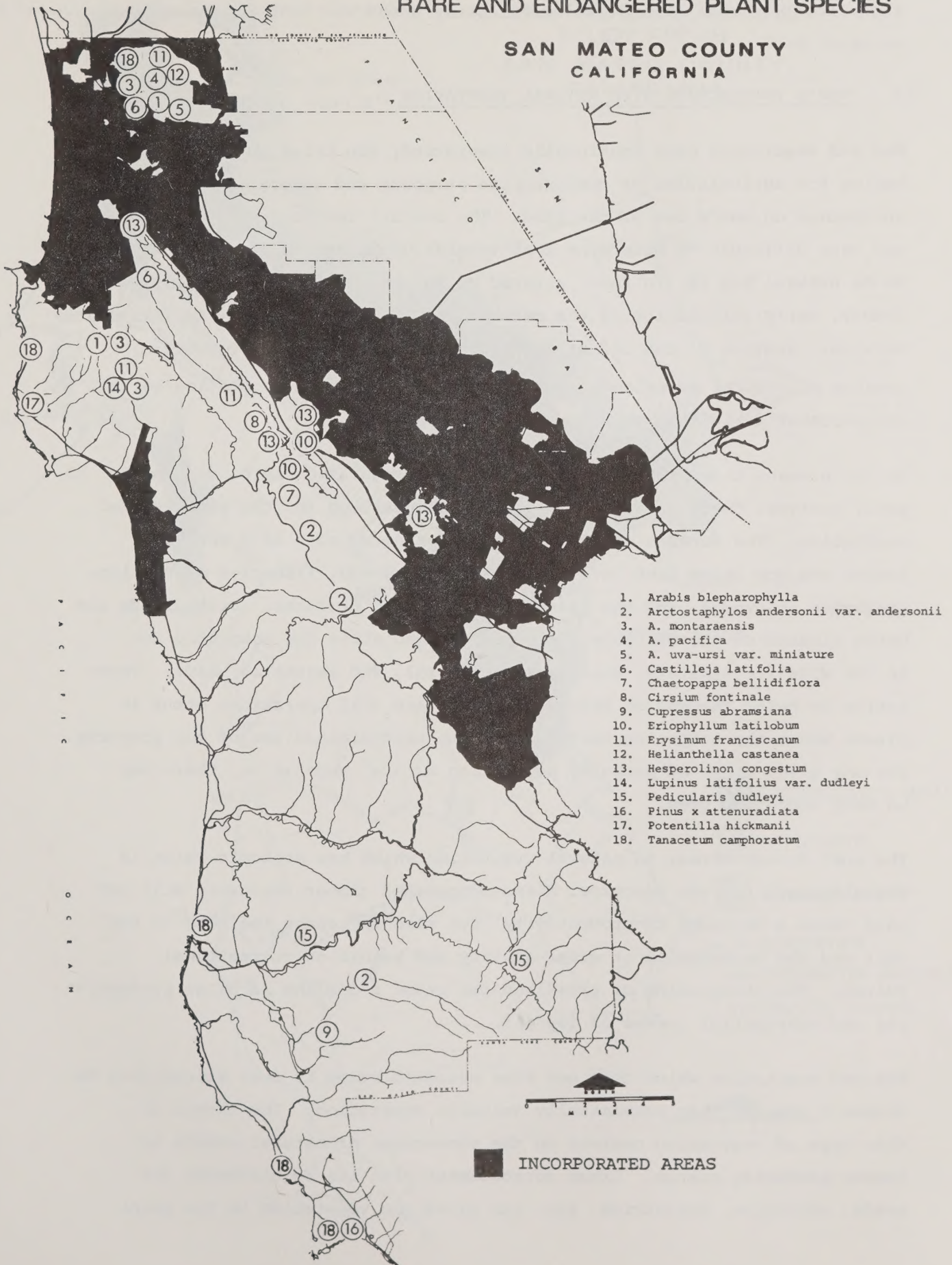
In addition to the identification of specific plant species, special habitats having unique qualities may be identified for preservation purposes. The accompanying map indicates the location of these areas. These habitats, and the justification for special preservation classification as ecological and scientific study areas, are as follows:

- (1) Coastal Strand, Salt Marshes, and Tidelands. These habitats occur

sporadically along both the marine and bay margins of the County. Preservation is of particular importance due to the limited occurrence of undisturbed examples of these biologically fragile areas. Specific areas which fall within this category are: the Faber Tract, Ano Nuevo Point, Franklin Point, the Half Moon Bay beaches, and the Fitzgerald Marine Reserve.

- (2) Freshwater Marshes - Habitats of this type occur only as the result of a long evolutionary process, and are relatively few in number. Two types of freshwater marshes are found in San Mateo County: coastal and upland. Because of the scarcity of both, preservation is very important.
- (3) Serpentine Soils. Serpentine soils occur infrequently in San Mateo County, and undisturbed habitats are quite rare. These sites are located in three areas: the San Francisco Watershed, the Jasper Ridge Biological Experimental Area, and the Emerald Lake area.
- (4) San Bruno Mountain. Within scattered sites on San Bruno Mountain may be found fifteen of the thirty-one species contained in Appendix I: RARE, ENDANGERED AND UNIQUE PLANTS, including two species which are found only at this site: Arctostaphylos imbricata, and Arctostaphylos pacifica. San Bruno Mountain, in toto, supports 542 plant species (71% of which are native), contained in three separate plant communities.
- (5) San Francisco Watershed. This unique habitat encompasses 35 square miles, Included within its boundaries are two biotic provinces, five vegetative types and corresponding plant communities, and approximately 600 plant species (or one-eighth of those in California). Substantial areas within the Watershed are virtually undisturbed by man.
- (6) Jasper Ridge Biological Experimental Area. This 735 acre outdoor laboratory belongs to Stanford University and has been used for biological study continuously for the last 75 years. Located in the Jasper Ridge-Searsville Lake area, it contains seven of the eleven vegetation types found in San Mateo County, five distinct plant associations (not counting the serpentine soil assemblage), and more than half of the vascular plant families growing in California.

RARE AND ENDANGERED PLANT SPECIES

SAN MATEO COUNTY
CALIFORNIA

Significant scientific and ecological study areas are indicated on the map on page 5-13

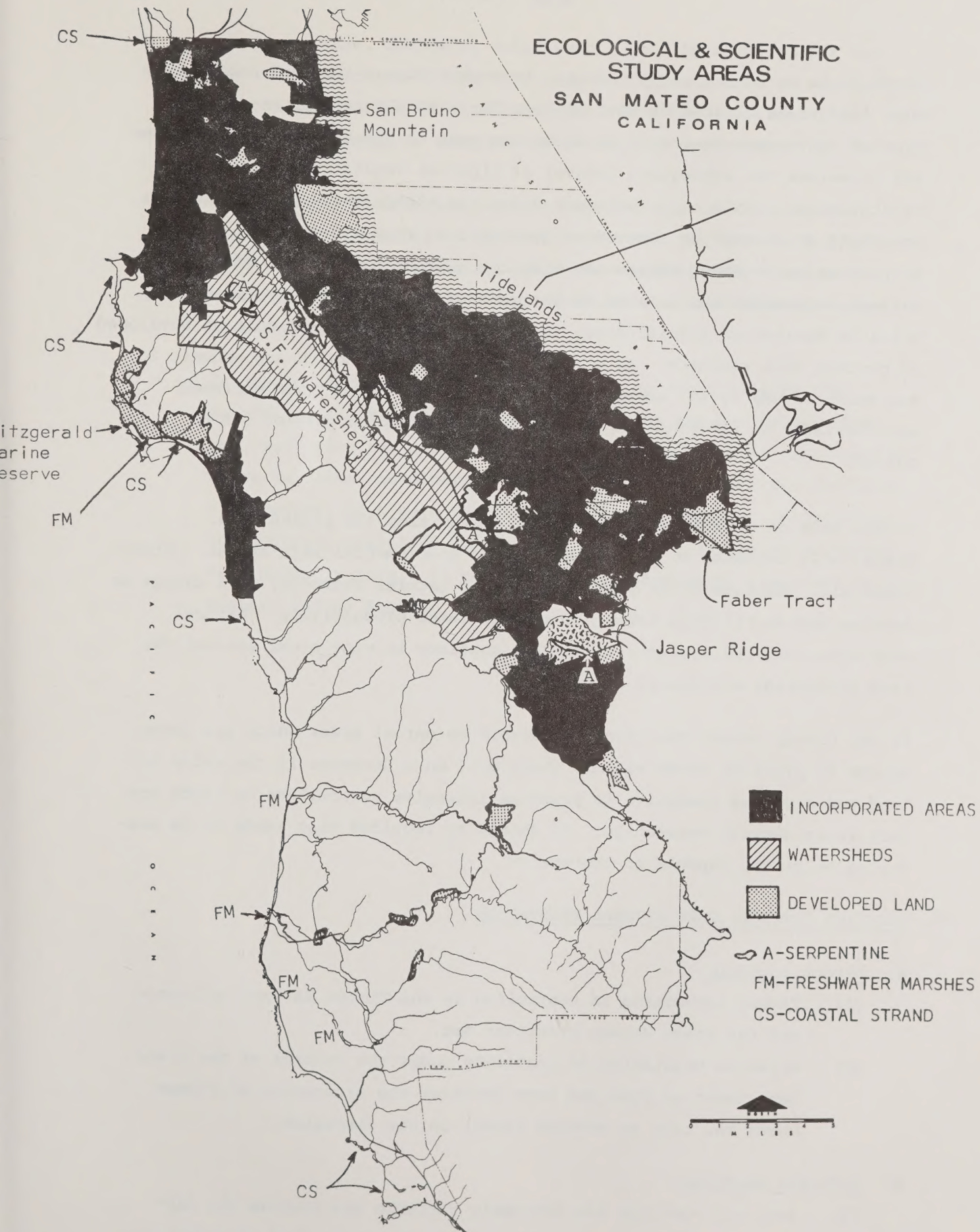
II. MAN'S INTERACTION WITH NATURAL VEGETATION

Man and vegetation have continually interacted; man tries to remove vegetation for agricultural or construction purposes and vegetation slowly encroaches on man's use of the land. The overall result is that it is now very difficult to determine what vegetation is natural and what appears to be natural but is, in fact, altered by man's activities. In San Mateo County, early utilization of the natural vegetation was limited to activities such as: logging of the old growth timber to produce forest products, grazing of natural grasslands, and clearing of unwanted vegetation so that agricultural activities could take place.

At the present time, man is using the natural vegetation as he did in the past; however, there are many new uses in competition for the same natural vegetation. The forests which were once considered only as a source of lumber are now being used for recreation, watersheds, fisheries protection, aesthetic enjoyment, and the production of forest products. Brush lands are being cleared to provide more agricultural land while the competing use is for wildlife habitats, soil erosion control, and aesthetic value. Vegetation is being removed so that quarry and land fill operations occur in places where the competing use might be the recreational use of the property. For any given piece of property supporting natural vegetation, there may be many competing uses.

The most direct threat to natural vegetation which has economic value is mismanagement of the resource. Mismanagement of timber resources will not only cause a decrease in productivity, but also may cause the loss of top soil and the degradation of water quality and scenic or recreational values. The overgrazing of grassland can cause a decline in range productivity and substantial losses of topsoil.

Natural vegetation which does not have economic value is more susceptible to dramatic changes than economically valuable vegetation. The threat to this type of vegetation centers on the conversion of natural stands to income producing status. Urban encroachment with its requirements for roads, utilities, industries, etc. can alter the vegetation to the point



where it is no longer recognizable. Increased demand for food could cause more land to be cleared of weed species for agricultural purposes. This type of conversion generally produces the need to create water storage dams and occasions the subsequent removal of riparian vegetation. Natural vegetation of little or no economic value has historically been treated as something which must be removed or destroyed so that the land may be used to produce an income commensurate with the cost of ownership. If the natural vegetation has a value to the general public and/or provides a wildlife habitat of significance, then policies and programs must be developed to protect this resource. As a result, plant species which are endemic to San Mateo County (i.e., occur nowhere else in the world) have suffered substantially as urbanization and man-induced plant succession has occurred.

Future uses of natural vegetation will approximate the present use. Timber will continue to be harvested under governmental regulations. Grasslands will continue to be grazed, but their natural character will change as seeding and fertilizing takes place to increase productivity. Natural vegetation without economic value will continue to wage a war against the land conversion activities of man.

If the County establishes strict controls on parcel sizes which are large enough to preclude urbanization, there will be a decrease in the value of land and a strong incentive to practice intensive agriculture on lands now containing natural vegetation. It should be required that lands to be converted be proven capable of conversion.

III. EXISTING CONTROLS OVER NATURAL VEGETATION

A. Direct controls

- (1) Timber harvesting is controlled by the Timber Harvest Ordinance and the State Forest Practices Act.
- (2) Riparian vegetation is partially under the control of the State Department of Fish and Game whenever the alteration of stream banks may have an adverse impact on the fisheries.

B. Indirect Controls

- (1) Indirect controls are extremely variable and involve the discretionary action of the government when some form of permit,

license, lease, contract, entitlement, etc. is required for the use of property for a specific purpose. If the natural vegetation is determined to be significant, then the entitlement to use may be denied or conditioned to require preservation of the vegetation.

- (2) Another form of indirect control involves the police powers of governments. Removal of natural vegetation may cause significant water quality problems which are controlled by various agencies and, indirectly, these agencies can control the vegetation removal.

It should be pointed out that there are no controls over the removal or alteration of natural vegetation per se, except when the vegetation has commercial value, e.g., commercial tree species. There is close coordination between the County and State Division of Forestry, with very few jurisdictional conflicts. As a result the controls exercised over timber harvesting in San Mateo County will probably result in the best forest management practices in the western United States.

APPENDIX I: RARE, ENDANGERED AND UNIQUE PLANTS OF SAN MATEO COUNTY	RARELY FOUND IN SAN MATEO COUNTY	RARE OR ENDANGERED	FOUND ONLY IN SAN MATEO COUNTY	FOUND ONLY IN SANTA CRUZ MOUNTAINS	FOUND IN SAN MATEO COUNTY AND 1 ADJACENT COUNTY	FOUND ON SERPENTINE SOILS
BOTANICAL NAME/COMMON NAME						
<u>Acanthomintha obovata ssp. duttonii</u> Dutton's Thornmint			X			X
<u>Allocarya chorisiana var. chorisiana</u> Artists' Allocarya				X		
<u>Arabis blepharophylla</u> Coast Rock Cress		X ¹				
<u>Arctostaphylos andersonii var. andersonii</u> Santa Cruz Mountains Manzanita		X	X			
<u>A. montaraensis (A. andersonii var. imbricata)</u> Montara Manzanita		X ¹		X		
<u>A. pacifica</u> Pacific Manzanita		X ¹	X			
<u>A. uva-ursi var. miniature</u> Prostrate Bearberry		X	X			
<u>Castilleja latifolia</u> Seaside Painted Brush		X ¹				
<u>Caenothus cuneatus var. dubius</u> Common Buck Bush				X		
<u>Chaetopappa bellidiflora</u> White-Rayted Chaetopappa		X ¹				
<u>Cirsium fontinale</u> Fountain Thistle		X ¹		X		X
<u>Cupressus abramsiana</u> Santa Cruz Cypress		X ¹		X	X	
<u>C. sargentii</u> Sargent Cypress	X					
<u>Eriophyllum latilobum</u> Woolly Sunflower		X ¹	X			

APPENDIX I (Continued)	RARELY FOUND IN SAN MATEO COUNTY	RARE OR ENDANGERED	FOUND ONLY IN SAN MATEO COUNTY	FOUND ONLY IN SANTA CRUZ MOUNTAINS	FOUND IN SAN MATEO COUNTY AND 1 ADJACENT COUNTY	FOUND ON SERPENTINE SOILS
BOTANICAL NAME/Common Name						
<u>Erysimum franciscanum</u> var. <u>crassifolium</u> Coarse-Leaved Wallflower				X	X	
<u>E. franciscanum</u> var. <u>franciscanum</u> Franciscan Wallflower		X ¹				X
<u>Helianthella castanea</u> Diablo Helianthella		X ¹				
<u>Hesperolinon congestum</u> Congested Dwarf Flax		X ¹			X	X
<u>Lessingia hololeuca</u> var. <u>arachnoidea</u> San Mateo Lessingia			X			X
<u>Lupinus latifolius</u> var. <u>dudleyi</u> Dudley's Lupine		X	X			
<u>Maianthemum dilatatum</u> False Lily-of-the-Valley	X					
<u>Malacothamnus arcuatus</u> Northern Malacothamnus				X		
<u>Orobanche uniflora</u> Naked Broomrape	X					
<u>Pedicularis dudleyi</u> Dudley's Lousewort		X		X	X	
<u>Pinus X attenuuradiata</u> Monterey Knobcone Pine		X		X	X	
<u>Potentilla hickmanii</u> Hickman's Cinquefoil		X ¹				
<u>Silene verecunda</u> ssp. <u>verecunda</u> Dolores Campion				X		
<u>Stylomecon heterophylla</u> Wind Poppy	X					

APPENDIX I (Continued)	RARELY FOUND IN SAN MATEO COUNTY	RARE OR ENDANGERED	FOUND ONLY IN SAN MATEO COUNTY	FOUND ONLY IN SANTA CRUZ MOUNTAINS	FOUND IN SAN MATEO COUNTY AND 1 ADJACENT COUNTY	FOUND ON SERPENTINE SOILS
BOTANICAL NAME/COMMON NAME						
<u>Tanacetum camphoratum</u> Dune Tansy		x ¹				
<u>Vaccinium arbuscula</u> Huckleberry	x					

x¹ appears on List of Rare and Endangered Species of the California Native Plant Society

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Chapter **6**
FISH AND WILDLIFE

FISH AND WILDLIFE

I. NATURE OF RESOURCE

This chapter concerns fish and wildlife resources in San Mateo County. Habitat type is the organizing concept, because habitat defines the nature of wildlife communities.

A. Habitat Types & Wildlife Inventory in San Mateo County

"Habitat" is defined as the complete set of environmental conditions affecting fish and wildlife at a given location. As such, habitat is affected and altered by natural processes and by man's activities which modify the environment.

The basic elements of habitat are water, climate and vegetation which in combination determine the food supply and availability of breeding and nesting sites for fish and wildlife.

San Mateo County contains a diversity of habitats and associated wildlife populations. These include the following general habitat types:

- (1) San Francisco Bay Estuary
- (2) Ocean Coastline and Inshore Area
- (3) Chaparral
- (4) Grasslands
- (5) Broadleaf Forests (Riparian Woodland and Oak Woodland)
- (6) Coniferous Forests
- (7) Coastal Marsh
- (8) Reservoirs

The wildlife inventory in the following section has been compiled by Maryann Danielson, Chief, Interpretive and Resource Management Division, Department of Parks and Recreation, County of San Mateo, in collaboration with the Audubon Society and Fitzgerald Marine Reserve Staff, and Bruce Elliott of the State Department of Fish and Game.

- (1) San Francisco Bay Estuary - As a wildlife habitat, the Bay encompasses distinct sub-environments including marshland, tidal flats, salt ponds and open water.

Marshes contain salt grass, cord grass and pickleweed, which are used primarily by birds and small mammals for nesting and feeding purposes. The California Least Tern, California Clapper Rail and Salt Marsh Harvest Mouse, all endangered species, are found in the major Bay marshlands in San Mateo County, as are the Vagrant Shrew, White-tailed Kite, Salt Marsh Song Sparrow and Short-eared Owl.

Mud flats and tidelands exposed at low tide are extensive. These areas are a rich feeding ground for fish and shore birds. Tidelands exist in many sections of the San Mateo County Bay-front, but are most extensive in Redwood City and Menlo Park.

Salt ponds were created for industrial use by diking off marsh areas. These salt ponds serve as a resting and feeding area for shorebirds and waterfowl. The brine shrimp in the salt ponds are a source of food for many bird species.

The open water surface of the Bay and its sloughs is used by ducks, cormorants, pelicans, geese and loons for resting and feeding. The Bay is also an important shelter for migratory shore and water birds along the Pacific Flyway.

The subsurface waters of the Bay are inhabited by marine mammals such as the harbor seals, and fish including Striped Bass, Starry Flounder, Perch and Sturgeon.

Species Common to San Francisco Bay Estuary

Mammals: Black-tailed Jack Rabbit (grassy areas back of marsh)
 Brush Rabbit
 Cottontail Rabbit
 Salt Marsh Harvest Mouse (Endangered Species)
 Vagrant Shrew

Birds:	Marsh Harrier	Winbrel (Hudsonian Curlew)
	Burrowing Owl	Western Sandpiper
	Long-billed Marsh Wren	Least Sandpiper
	Redwing Blackbird	Avocet
	Western Meadow Lark	Marbled Godwit
	Great Egret (formerly American or Common Egret)	Short-billed Dowitcher
	Snowy Egret	Black-necked Stilt
	Great Blue Heron	Coot
	Black-crowned Night Heron	Shoveler (uncommon winter visitor)
	Western Grebe	Mallard
	Pied-billed Grebe (mainly in fresh water)	Ruddy Duck
	Horned Grebe	Canvas-back
	Eared Grebe	Pintail
	Forster's Tern	Lesser Scaup
	Caspian Tern	Greater Scaup
	California Least Tern (Endan- gered Species)	Western Gull
	Willet	Ring-billed Gull
	Long-billed Curlew	California Gull
	Semi-palmated Plover	Black-bellied Plover
	Salt Marsh Song Sparrow	Killdeer
	California Brown Pelican (En- dangered Species)	Double-crested Cormorant
	White-tailed Kite (uncommon)	California Clapper Rail (Endangered Species)
	Pipit (winter visitor)	Horned Lark (winter visitor)
Fish:	Striped Bass	Staghorn Sculpin
	Starry Flounder	Oriental Goby
	Speckled Sanddab	Leopard Shark
	Shiner Perch	Top Smelt
	Black Perch	Jack Smelt
	White Perch	Lingcod

- (2) Open Coastline and Inshore Area - The coastal marine environment has distinct zones, including the intertidal and subtidal, both surface and subsurface. The San Mateo Coastline extends about 45 miles, with

alternating stretches of rocky headlands, bluffs, and sandy beaches. The type and amount of substrate along the shore, which varies in San Mateo County, is a critical factor in the wildlife value of a section of coast. Substrata rock produces intertidal reefs, protected channels, tide pools and lagoons, providing a diversity of habitat types. The approximately four mile portion from Montara Point to Pillar Point constitutes one of the most productive marine tidelands and nearshore habitats in central California due in great part to the occurrence of a hard, slaty shale substratum. In this area, marine life is varied and abundant.

Ano Nuevo and the area immediately north is another high value wildlife area. The Pescadero-Pigeon Point-Ano Nuevo area is characterized by hard conglomerate substrata and sandstone rock outcrops. Harbor Seals, the California and Steller's Sea Lion, and Elephant Seals all breed on the off-shore islands. There is a nesting colony of Pelagic Cormorants and Western Gulls as well. The intertidal zone is rich in its abundance and variety of algae and invertebrate animal life. Migratory birds, including the Black Brant, diving ducks, numerous gull and tern species and shorebirds are also present. The Turkey Vultures, Red-tailed Hawks, and on rare occasions Golden Eagles can be found in County coastal areas.

A variety of fish inhabit the off-shore waters of San Mateo County. Bottom fish are the most prominent sport fish and include Blue Rockfish, Lingcod, Black Rockfish, Canary Rockfish, Copper Rockfish, and Brown Rockfish. These are the principal sport species in the shallow water reefs near Princeton, Pescadero and Ano Nuevo. In deeper water, there are Salmon, Red-tail perch, Striped Bass, and Halibut. Salmon are found primarily off Pedro Point and Mussel Rock, and at Princeton at certain times of the year. Crab are found off Princeton and Pedro Point. Abalone are chiefly in the off-shore area from Pescadero to Ano Nuevo.

Species Common to Open Coastline and Inshore Area

Mammals: California Gray Whale

Dolphin (off shore)

California Sea Lion)

Harbor Seal)

Steller's Sea Lion) Breed on Ano Nuevo Island

Elephant Seal)

Birds: California Gull

Killdeer

Mew Gull

Sandpipers

Western Gull

Surf Scoter

Heerman's Gull

Pelagic Cormorant

Herring Gull

Brandt's Cormorant

Glaucous-winged Gull

Common Murre

Marbled Murrelet

Western Grebe

Black Turnstone

Surfbird

Wandering Tattler

Willet

Godwit

Pacific Brown Pelican (Endangered Species)

Black-bellied Plover

Wandering Tattler

Sanderling

Black Brant (Uncommon -

Elegant Tern (Migrant)

only at Ano Nuevo, Pescadero)

Fish: Blenny Eel (tidepools)

White Croaker

Rockfish

Sculpin

Lingcod

- (3) Chaparral - Chaparral areas are characterized by heavily branched shrubs including scrub oak, chamise, manzanita, and low, slenderly branched shrubs such as coyotebush and poison oak. These occur in generally dry, shallow rocky soils on the south and east facing slopes of coastal foothills of the County. The chaparral areas support a variety of mammals, reptiles and birds. Several hawk species, including the Sharp-shinned Hawk, inhabit San Mateo County chaparral and woodland areas. The Ring-tailed cat might be found in dry, rocky areas in the

southern portion of the County and there are reportedly a few Mountain Lions in the western portions as well.

Species Common to Chaparral

Mammals:	Mule Deer (Black-tailed)	Spotted Skunk
	Ring-tailed Cat (rare if at all)	Coyote
	Bobcat	Grey Fox
	Trowbridge Shrew (not commonly seen)	Brush Rabbit
	Deer Mouse	Long-tailed Weasel
Birds:	Red-tailed Hawk	Lesser Goldfinch
	Turkey Vulture	Wrentit
	Sparrow Hawk	California Quail
	White-crowned Sparrow	Bushtit
	Golden-crowned Sparrow	Chestnut-backed Chickadee
	Fox Sparrow	California Thrasher
	Song Sparrow	Rufous-sided Towhee
	Linnet or House Finch	Lazuli Bunting (summer)
	Purple Finch (rare)	Brown Towhee
	American Goldfinch	
Reptiles and Amphibians:		
	Western Rattlesnake	Western Fence Lizard
	Common Kingsnake	Western Racer
	Northern Alligator Lizard	Red-sided or terrestrial Garter Snake

- (4) Grasslands - Plant life throughout the grasslands is generally restricted by high afternoon temperatures, lack of retained moisture and thin rocky soil. Annual grasses, such as foxtail and soft cheat are predominant. Some savannah habitat with large oak trees is found in the southeast portions of the County.

The seeds, stems, leaves and roots of the grasses serve as food for birds and mammals. Wildlife in these areas of San Mateo County can be characterized as transient or permanent,

diurnal or nocturnal, and includes hawks, such as the Red-tailed Hawk and American Kestrel, vultures, numerous kinds of songbirds, raccoons, deer, foxes and rabbits, among others.

Species Common to Grasslands

Mammals:	Black-tailed Deer	Botta Pocket Gopher
	Coyote	California Meadow Mouse
	Grey Fox	Western Harvest Mouse
	Black-tailed Jack Rabbit	Deermouse
	Audubon Cottontail	Long-tailed Weasel
	Broad-handed Mole	
Birds:	Turkey Vulture	Western Meadow Lark
	Sparrow Hawk (Kestrel)	Horned Lark
	Red-tailed Hawk	Pipit (winter visitor)
	Barn Owl	Mourning Dove
	Crow (migrant)	Grasshopper Sparrow
	Brewer's Blackbird	Say's Phoebe (winter visitor)
	Loggerhead Shrike	
Reptiles and Amphibians:		
	Western Toad (near water)	Western Racer
	Western Rattlesnake	Western Ring-neck Snake
	Common Kingsnake	Northern Alligator Lizard
	Pacific Gopher Snake	Southern Alligator Lizard

- (5) Broadleaf Forests (Riparian Woodland and Oak Woodland) - Broad-leaf forests, characterized by madrone, tanoak, California buckeye and laurel, alder, big leaf maple, and other deciduous plants, occur generally on north facing slopes and within stream valleys. The riparian (or streamside) valley areas sustain an abundance of wildlife. Water is available, temperatures are cool, and breezes are light. The moisture has resulted in a soil which is rich in organic materials. In general, wildlife nesting and feeding sites are plentiful. Songbirds, game birds, game mammals and furbearers are present. Forest owls, including the Great Horned Owl, and the open-oak woodland Screech Owl can be found in San Mateo County. The Red-shouldered Hawk and Cooper's Hawk are local riparian woodland species.

San Gregorio, Pescadero and Gazos Creeks support anadromous salmon and steelhead runs. In addition, Purisima, San Pedro, Tunitas and Butano Creeks contain sport fish populations.

Species Common to Broadleaf (Riparian and Oak Woodland)

Mammals: Western Grey Squirrel

Fox Squirrel

Common Opossum

Raccoon

Little Brown Bat

Pallid Bat

Red Bat

Deer Mouse

Vagrant Shrew (not common)

Ornate Shrew (not common)

Trowbridge Shrew (not common)

Dusty-footed Wood Rat

Black-tailed Deer

Birds: R = Riparian

Violet-green Swallow (R)

Red-shouldered Hawk (R)
(rare)

Tree Swallow (R)

Black Phoebe (R)

Western Flycatcher

Hermit Thrush (Winter)

Swainson's Thrush (Winter)

Robin

Varied Thrush (Winter
Visitor)

Bewick's Wren

Screech Owl

House Wren

Great Horned Owl

Hutton's Vireo

California Quail

Song Sparrow

Lesser Goldfinch

American Goldfinch

Wilson's Warbler (R)

Orange-crowned Warbler (R)

Belted Kingfisher (R)

Scrub Jay

Acorn Woodpecker

Titmouse

Chestnut-backed Chickadee

Bush tit

Ruby-crowned Kinglet (Win-
ter Visitor)

Warbling Vireo

Band-tailed Pigeon

Oregon Junco

Olive-sided Flycatcher (R)

Common Flicker

Reptiles and Amphibians:

Red-legged Frog

Yellow-legged Frog

Pacific Tree Frog

Western Toad

Common Garter Snake (red-
sided)

King Snake

California Newt

Arboreal Salamander

California Slender Salamander

Western Racer

Alligator Lizard

Species Common to Broadleaf (Riparian and Oak Woodland) cont.:

Western Aquatic Garter Snake	Western Skink
Western Ring-necked Snake	Western Fence Lizard

- (6) Coniferous Forests - These areas are characterized by coast Redwood, Douglas fir, and hardwoods. Monterey Pine and Monterey Cypress (introduced) are interspersed with broadleaf forest types. This habitat is found on the western slopes of the coastal mountains, often penetrated by fog. The soil is moderately deep, with a rich supply of organic material, and has cool temperatures. Deer, coyote, the Western Garter Snake, a variety of hawks, owls and woodpeckers, as well as a host of other mammals, reptiles, amphibians and birds inhabit the fringes of the coniferous forest zone. As the density of the forest increases, the number and variety of wildlife species decreases.

Species Common to Coniferous Forests

Mammals: Black-tailed Deer

Gray Squirrel	Silver-haired Bat	)	
Long-tailed Weasel	Hoary Bat	)	Found in
Ornate Shrew	Red Bat	)	San Mateo
Vagrant Shrew	Hairy-winged Myotis	)	County but
Shrew-mole (Neurotrichus)	Long-eared Myotis	)	rarely seen.

Birds:

Sharp-shinned Hawk	Oregon Junco
Cooper's Hawk	Rufous-sided Towhee
Great Horned Owl	Brown Creeper
Saw Whet Owl	Pygmy Nuthatch
Band-tailed Pigeon	Chestnut-backed Chickadee
Steller's Jay	Olive-sided Flycatcher
Downy Woodpecker	Golden-crowned Kinglet
Acorn Woodpecker	Western Flycatcher
Hairy Woodpecker	

Reptiles: Southern Alligator Lizard

Southern Alligator Lizard	California Newt
Northern Alligator Lizard	Rough-skinned Newt
Sharp-tailed Snake (uncommon)	Black Salamander (uncommon)
Arboreal Salamander	California Slender Salamander
Western Rattlesnake	Ensatina

- (7) Coastal Marsh - Coastal marsh is extremely valuable for the production and maintenance of wildlife. It serves as a waterfowl and waterbird nesting and wintering area. Pescadero marsh, on the San Mateo coast, is a representative coastal marsh habitat.

Species Common to Coastal Marsh

Mammals:	Norway Rat	Harvest Mouse
	Brush Rabbit	Muskrat
	Shrew	Meadow Mouse

Reptiles and Amphibians:

Garter Snake

Birds:	Pied-billed Grebe	Marsh Hawk
	American Bittern	Pheasant (escapee)
	Great Blue Heron	Virginia Rail
	Great Egret	Marsh Wren
	Snowy Egret	Yellowthroat
	Coot	Belted Kingfisher
	Ruddy Duck	Black Phoebe
	Cinnamon Teal	Barn Swallow
	Pintail Duck	Cliff Swallow
	Shoveler (winter visitor)	Red-winged Blackbird
	Pectoral Sandpiper (migrant)	Savannah Sparrow (winter visitor)
	Baird Sandpiper (migrant)	
	Barn Owl	

- (8) Reservoirs - The County contains many water supply and storage reservoirs, including San Andreas, Pilarcitos, Crystal Springs, Higgins Creek, Searsville, Lucerne, Lower and Upper Bean Hollow. Artificial reservoirs function as watering and resting places for mammals, birds and waterfowl. Fluctuation in water level, however, prevents the growth of shore vegetation and causes a reduction in wildlife value. The Red-legged Frog and San Francisco Garter Snake, an endangered species, inhabit the Crystal Springs area. San Andreas Lake and Crystal Springs Reservoir contain good warm water fish and trout populations.

Pilarcitos Lake, within the San Francisco Water Department property, contains a good population of trout, and tributary streams are available for trout reproduction.

Species Common to Reservoirs¹

Mammals: Beaver (planted in Crystal Springs lakes)

Fish:	Bass	Crappie
	Bluegill	Catfish
	Sunfish	Crown Bullhead

Birds:	Common Loon	Widgeon (Baldpate)
	Pied-billed Grebe	Coot
	Canada Goose	Ring-necked Duck
	Ruddy Duck	Bufflehead
	Mallard	California Gull
	Canvasback	Pintail

Reptiles and Amphibians:

Red-legged Frog	Newt (California & Rough-skinned)
Western Pond Turtle	Aquatic Garter Snake

¹ See General Wildlife Habitat Types map on page 6-12

GENERAL WILDLIFE HABITAT TYPES SAN MATEO COUNTY CALIFORNIA



B. Rare and Endangered Species¹

The Endangered Species Act of 1970 requires the State Department of Fish and Game to establish criteria for determining if a species or subspecies of bird, mammal, fish, amphibian or reptile is "endangered" or "rare"; biennially inventory and identify such species or subspecies; and make recommendations for preserving, protecting and enhancing the conditions of such species in the State. The initial report was, as required, submitted to the Governor and State Legislature in January, 1973 (Fish and Game Code, Sections 900-903).

Under the law, a species is "endangered" when its prospects of survival and reproduction are in immediate jeopardy from one or more causes including loss of habitat, change in habitat, overexploitation, predation, competition or disease (Fish and Game Code, Section 2050a). A species or subspecies is "rare" when it, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code, Section 2050b).

At this time, forty-three forms of California's non-game fish and wildlife are designated as endangered or rare. Four of these are found in San Mateo County.

- (1) California Clapper Rail (*Rallus longirostris obsoletus*) - The California Clapper Rail is a long-billed brown bird which inhabits salt marshes. Although it can also be found in other areas, it is most abundant in South San Francisco Bay, numbering about 1300 pairs, principally on Greco and Bair Islands. Bay fill and water pollution, and the introduced old-world rat threaten its existence.
- (2) California Least Tern (*Sterna Albifrons browni*) - The California Least Tern, white with black-tipped wings and a black-capped head, is the smallest of the terns. From April through September, it can be found along the coastline from

¹At the Crossroads, State of California, the Resources Agency, Dept. of Fish and Game, January, 1972.

Mexico to San Francisco. It winters in the southern hemisphere and breeds along the Pacific coast from Baja California to San Francisco Bay. A nesting area is located on Bair Island. Habitat destruction, predation and human disturbance are responsible for its declining population.

- (3) Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*) - The Salt Marsh Harvest Mouse inhabits the brackish and salt marshes of San Francisco Bay. Bay fill has reduced the habitat of the Harvest Mouse and it is now confined to scattered locations, some of which are along the San Mateo County Bay-front.
- (4) San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*) - The San Francisco Garter Snake is found only within San Mateo County, principally west of Skyline and south to Ano Nuevo, commonly in vegetation and marshy areas bordering ponds and reservoirs.

See "Species" Map on page 6-15

C. Fisheries

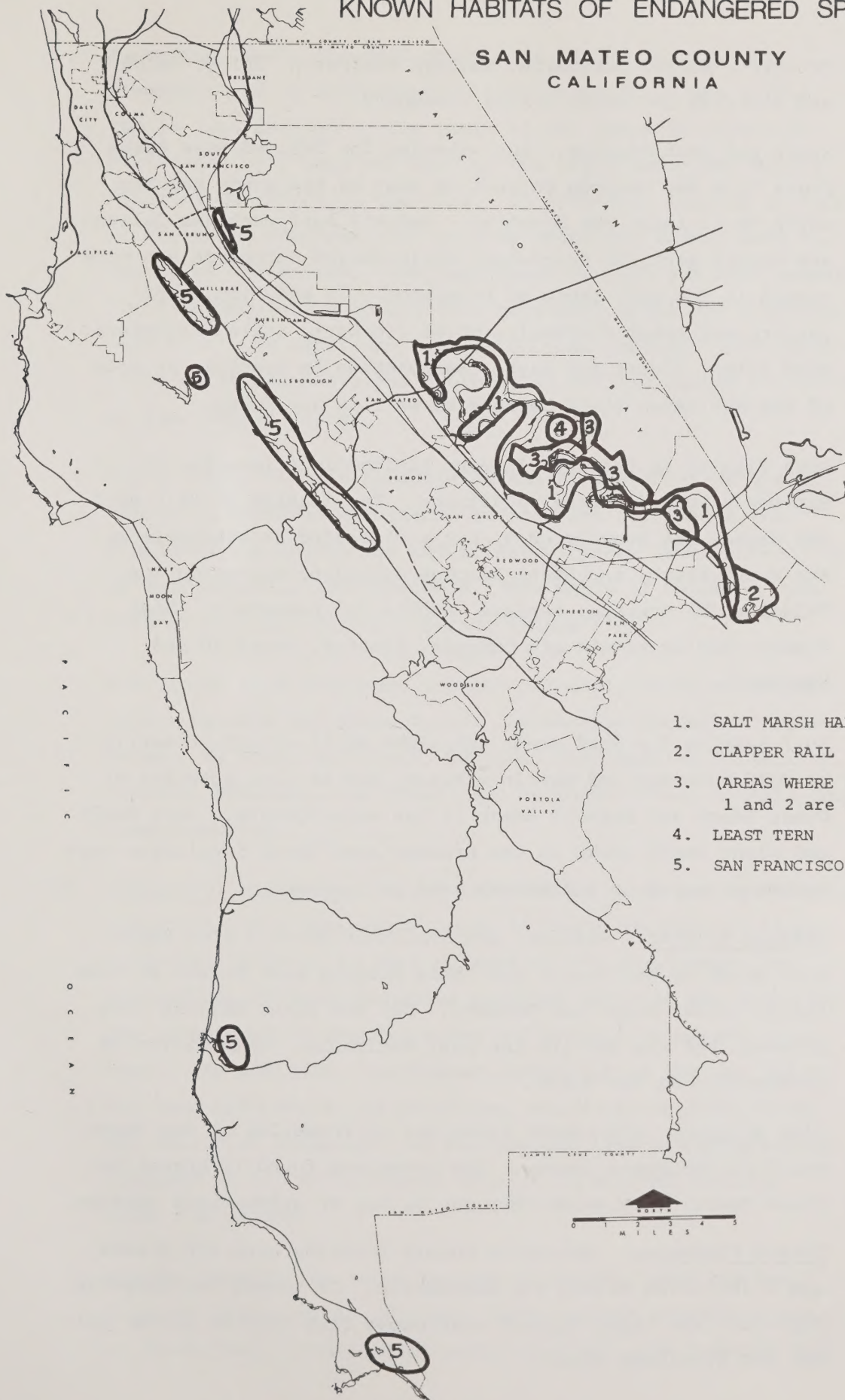
(1) Sport Fisheries.

Party Boat Fishing. In the Bay Area, party boats are generally for King Salmon and Striped Bass trolling. At Princeton, the only location where party boats are available in San Mateo County, salmon trolling is undertaken only during certain times of the year. Bottomfish account for the bulk of the catch, including Lingcod and numerous species of rockfish.

Skiff Fishing. Skiff rentals are available at Pedro Point and Princeton. Skiff fishermen are limited to shallow areas close to shore. Although salmon trolling is possible during runs, the bulk of skiff fishing is for bottomfish, including chiefly Blue Rockfish, Black Rockfish, White Croaker, Lingcod, Cabezon, Jacksmelt and Kelp Greenling. In addition, crabbing for market crabs is done at Princeton and Pedro Point. The rocky bottom and kelp beds at Princeton supply Red and Rock crabs.

Pier Fishing. The piers at Princeton are built over a sandy bottom. As a result, the most common fish caught are White

KNOWN HABITATS OF ENDANGERED SPECIES

SAN MATEO COUNTY
CALIFORNIA

Croakers, Barred Surfperch, Walleye Surfperch, Shiner Perch and flatfish including Starry Flounders.

Shore and Rock Fishing. Surf-casting for Striped Bass takes place from May through October on most of the sandy beaches south to at least San Gregorio. Redtail Surfperch and Calico are caught north of Princeton, while Barred Surfperch are more common in the surf south of Princeton. In addition, surf-casters may catch Jacksmelt, White Croakers, Starry Flounders, Sand Soles, Sharks and Rays. Surfcasting is possible at each of the San Mateo State beaches as well as Ano Nuevo.

Rock fishing is feasible in more limited locations due to extremely rugged bottom conditions. The jetties at Half Moon Bay Harbor are heavily used, but rockfishing is available at Ano Nuevo Beach, and State beaches including Arroyo de los Frijoles, El Granada, Montara, Pebble and Pescadero. Most common species caught are Cabezon, Lingcod, Rockfish and Surfperch.

Surf netting for Surf Smelt and Night Smelt occurs primarily at Half Moon Bay and Martin's Beach, but is also possible at Dunes Beach and Francis Beach in San Mateo County. Surf Smelt and Night Smelt spawn in the breaker area where fertilized eggs become attached to individual sand particles.

Abalone picking. Abalone are available chiefly from Pescadero Beach to Ano Nuevo, but shore picking also occurs at Moss Beach, Pillar Point and Montara. Red and Black Abalone are present, but the Red are the most desirable. Skin diving is predominant at Ano Nuevo.

Clam digging. Littleneck clams may be trowelled at Ano Nuevo Point in San Mateo County. The clams are found in gravel between rocks, from which they may be dug at appropriate seasons.

Inland Fisheries. San Mateo County contains over 100 creeks and tributaries within its boundaries. Of these, San Gregorio, Pescadero and Gazos support anadromous fish runs of Silver Salmon and Steelhead Trout.

Pescadero Creek, the most productive in the County, has a Steelhead run of approximately 1500 each year. The salmon run is less abundant. The mouth of the creek is naturally obstructed by a sand bar much of the year, which may have a deleterious effect on the runs. In addition, logging in much of the upper drainage area in past years has caused some siltation of the stream. The Department of Fish and Game augments the fish population by planting catchable trout and Steelhead each year. In addition, Pescadero Creek contains good populations of Sticklebacks and Sculpin, as well as Starry Flounders in the lower portion.

Gazos Creek, with an adequate stream flow and stream gravel deposits, provides a suitable environment for salmon and Steelhead egg incubation and nursery. There is an annual run of approximately 100 Steelhead. The mouth of Gazos is open most of the year due to a steady stream flow.

Additional fish resources include primarily Sculpin, Sticklebacks, Rainbow and Brown Trout. Denniston, Purisima, Bogess, Butano, El Corte de Madera, Tunitas, Frenchman's, Pilarcitos, Lobitos, Pomponio, San Pedro, and La Honda Creeks contain good fish resources.

- (2) Commercial Fisheries. Since 1930 the Bay Area has declined in importance on a State-wide basis in the production of fish products. This is in part related to the development and utilization of fish resources in other parts of the State and the investment in manufacturing and processing plants elsewhere. In addition, the fishery potential of the Bay Region has been reduced due to pollution, which has eliminated the Bay shellfish industry. At the present time commercial fish landings in San Mateo County consist chiefly of abalone, crab, and salmon.

Abalone inhabit the rocky beaches along the coast but may occur at depths up to 300 feet, with maximum concentrations at 25-40 feet. The shallow waters however, are reserved for

sport use. The contribution of the Bay Area to the State-wide abalone catch is small, and quite variable historically.

The commercial market crab fishery extends from Alaska to Avila, California. Crabs are generally taken in the Bay Region in the Gulf of the Farallones and Bodega Bay, but the fishery extends south to Martins Beach. Prior to 1900 crabs were taken primarily within San Francisco Bay. In general, crab landings in the Bay Region have declined since the late 1950's.

The commercial fishery for salmon extends from Alaska to Central California. The Bay Area has always been the chief King (or Chinook) salmon fishery in California. The salmon fishery, in turn, is second only to tuna in its importance to the State. At the present time, by law, the commercial catch comes exclusively from the ocean. The local fishery occurs primarily within the Bodega Bay - Gulf of the Farallones area, primarily during June and July, the peak fishing months.

II. MAN'S INTERACTION WITH RESOURCE

A. Beneficial Uses of Wildlife

- (1) Sport and Recreation. The recreational use of fish and wildlife resources is both appropriative and non-appropriative in nature. Appropriative use includes sport fishing in coastal waters; angling in coastal streams and reservoirs; hunting or trapping big game, waterfowl, upland game birds, and small game mammals.

Recreational activities such as hiking, camping, picnicking, photography and skindiving, all of which are enhanced by the presence of wildlife, are termed non-appropriative uses.

San Mateo County affords opportunities for the recreational enjoyment of wildlife. There are eleven beaches comprising the San Mateo State Beaches. In addition, Ano Nuevo is a State beach and preserve. Sandy beaches are available for surfcasting and surfnetting. Rocky shorelines provide an

opportunity for rockfishing. Ano Nuevo is good for skin-diving and observation of marine life.

State and County redwood parks provide fresh water stream fishing, campsites, picnic areas and hiking trails.

Upper Bean Hollow Lake, a water supply reservoir and Searsville, a warm water lake, are heavily used by anglers.

Streams of major importance to anglers are San Gregorio, Pescadero, and Gazos. San Pedro, Tunitas, Butano, Denniston and Purisima are also trout streams. There are no State or Federal Waterfowl Management Areas in San Mateo County for hunting.

- (2) Commercial fisheries. Fisheries have long been of economic importance to the Bay region. Commercial landings in San Mateo County ports at the present time include chiefly crab, salmon, and abalone. "Annual landings of all commercial species in the San Francisco Area from 1957 through 1966 ranged from 15.2 million to 24.6 million pounds while value to the fisherman ranged from \$2.2 million to nearly \$4.0 million."¹ This includes all ports from Bodega Bay to Half Moon Bay. Subsequent handling, processing and retailing increases the total economic value substantially.
- (3) Scientific and Educational Use. There are two marine biological reserves in San Mateo County. The coastline from Point Montara to Pillar Point, the James V. Fitzgerald Marine Reserve, supports abundant and varied intertidal marine life. The reserve was established by the County of San Mateo to protect this outstanding area from misuse.

Ano Nuevo is a Reserve under State jurisdiction. The public is not permitted on the island, one half mile offshore from Point Ano Nuevo, to protect breeding grounds of the Northern Elephant Seal and Stellar Sea Lions. In addition, large

¹ Odema, Wild, and Wilson, Survey of the Marine Environment From Fort Ross, Sonoma County, to Point Lobos, Monterey County, State of California, Resources Agency, July, 1968.

populations of California Sea Lions, Harbor Seals, and birds are found on the island. Ano Nuevo is unique in its abundance of marine mammals in such close proximity to the scientific community.

A commercial marine laboratory is located at Pigeon Point. In addition, Jasper Ridge is a grassland ecological preserve owned and administered by Stanford University, located at the southern boundary of the County. See map of "Scientific and Ecological Areas" discussed in the previous section.

B. Man's Impact on Fish and Wildlife

In addition to natural processes which continually affect fish and wildlife habitat and populations, man exerts a tremendous influence through alteration of the environment as follows:

- (1) Elimination of Habitat. This includes urbanization, excavations, harbor dredging, logging, mining, water development or flood control projects, bay fill and some extractive activities which remove native vegetation and eliminate feeding and nesting areas.
- (2) Interference with Natural Processes. This includes air, water and noise pollution, fire control, logging, indiscriminate use of pesticides, alterations of natural wildlife populations through predator control and the introduction of non-native species, and road construction which may affect migration patterns.
- (3) Appropriations. This includes hunting and trapping, sport fishing and commercial utilization.

III. EXISTING CONTROLS AND RESPONSIBILITIES

The following section lists functions and responsibilities for different levels of government and their sub agencies.

A. Federal Functions¹

- (1) Meet international treaty obligations.
- (2) Cooperate with the states.
- (3) Conduct research.
- (4) Administer Federal lands.
- (5) Meet obligations of the Fish and Wildlife Coordination Act.
- (6) Administer the Federal Aid in Fish and Wildlife Restoration and the Commercial Fisheries Research and Development programs.
- (7) Preserve rare, endangered migratory species.
- (8) Develop commercial fisheries.
- (9) Enforce Federal laws and regulations.
- (10) Provide facilities, services and access for the recreationist on Federal lands.
- (11) Regulate the recreationist in relation to the Federal land and facilities.
- (12) Propose State recreational use regulations.
- (13) Help the State enforce fish and wildlife use regulations.
- (14) Set the framework for the State's regulation of the use of migratory birds.

Federal Agencies Concerned with Wildlife Resources

Department of Interior's Bureau of Sport Fisheries and Wildlife

Divisions:	Wildlife Refugees	Realty and Engineering
	Hatcheries	Fishery Service
	Wildlife Research	

National Park Service

Bureau of Land Management

Department of Commerce, National Marine Fisheries Service

Department of Agriculture, Animal Health and Plant Quarantine, Consumer Protection Service and Soil Conservation Service

U.S. Treasury Department, Bureau of Customs

Environmental Protection Agency

¹ California Fish and Wildlife Plan, State of California, Resources Agency, Vol. I, January 1, 1966

B. State Functions¹

- (1) Maintain and manage all of the State's fish and wildlife resources including rare and endangered resident species.
- (2) Conduct research and collect statistical data to facilitate the maintenance and management of the State's fish and wildlife resources.
- (3) Cooperate with the Federal Government and other states.
- (4) Enforce laws and regulations governing fish and wildlife.
- (5) Protect state water quality.
- (6) Consider fish and wildlife resources when planning water development, flood control or when appropriating water.
- (7) Protect fish and wildlife resources threatened by highway construction.
- (8) Maintain fish and wildlife habitat in parks.
- (9) Establish regulations for the recreational use of fish and wildlife.
- (10) Enforce fish and wildlife use regulations.
- (11) Provide facilities and services and control the recreationist on State lands.
- (12) Provide access to State waters and public lands.
- (13) Enforce Wilderness Area regulations restricting motorized vehicles.
- (14) Disseminate information on fish and wildlife resources to the recreationist and guide educational efforts concerning these resources.
- (15) Enforce Federal and State laws and regulations governing the use of and providing protection for fish and wildlife resources.

State Agencies Concerned with Wildlife Resources

Resources Agency

Department of Fish and Game

Department of Conservation

Department of Water Resources

¹ California Fish and Wildlife Plan, State of California, Resources Agency, Vol. I, January 1, 1966

Department of Parks and Recreation

Department of Navigation and Ocean Development

State Office of Planning and Research

Coastal Conservation Commission

C. Regional Functions

- (1) Protect water quality in areas of "special biological significance".
- (2) Regulate San Francisco Bay fill and shoreline development.
- (3) Coordinate local planning activities and identify regional interests in land use allocation.
- (4) Protect air quality.

Regional Agencies Concerned with Wildlife Resources

Regional Water Quality Control Board (RWQCB)

Bay Conservation and Development Commission (BCDC)

Association of Bay Area Governments (ABAG)

Coastal Conservation Commission (CCC)

Regional Air Pollution Control Board (RAPCB)

D. County Functions

- (1) To develop a conservation and open space plan for the "conservation, development and utilization of natural resources including...fisheries, wildlife..."[Government code, Section 65302 (d)].
- (2) To maintain ground and surface water quality.
- (3) To provide opportunities for recreation and enjoyment of wildlife.
- (4) To assist the Department of Fish and Game in predator control programs.

County Agencies Concerned with Wildlife Resources

Planning Department

Department of Health and Welfare, Health Division

Department of Parks and Recreation

School Department

Department of Agriculture

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Chapter **7**
SOILS AND AGRICULTURE

SOILS AND AGRICULTURE

I. NATURE OF RESOURCE IN SAN MATEO COUNTY

This chapter discusses soil resources in San Mateo County. It is concerned with soils in terms of the following factors:

- (1) Their beneficial use for agricultural purposes.
- (2) Their protection against indiscriminate use and possible despoliation through overuse, abuse, or misuse leading to erosion.
- (3) Their engineering properties which affect the suitability of different types of uses and construction materials and around which precautionary measures must be taken to avoid costly misjudgements.

Much of the information on which this chapter is based is derived from the Soil Survey of the U.S. Department of Agriculture, Soil Conservation Service issued in 1961, covering virtually the entire Coastside area. Unfortunately, no comparable information is available for the Bayside of the County, most of which has already been intensively developed with urban uses.

A. Breakdown of Resource into Functional Categories

Soil types on the Coastside have been classified by the San Mateo County Resource Conservation District according to seven association types, the first four being soils of the uplands and the last three being soils of the marine terrace, alluvial fans and flood plains. Soils within each association have similar properties and characteristics. The seven association types are described briefly below and are shown in the map on page 7-3.

- (1) Hugo-Butano - Steep and very steep, brownish, moderately deep and deep soils on sedimentary rocks under coniferous forest. These soils occur on 38% of the Coastside area. The best use of the Hugo Butano soil association area is timber production.
- (2) Miramar-Sheridan - Steep and very steep, dark colored, shallow to deep soils on acid igneous rocks under shrubs or forest. These soils occur on less than 5% of the Coastside area. Soils of this association type can be used for timbering; however, because of the steep terrain and high rainfall in areas defined by this soil

association, use of the land for watershed purposes is more important.

- (3) Sweeney-Mindego - Sloping to very steep, dark colored, moderately deep soils on basic igneous rocks under grass or forest. These soils occur on approximately 7% of the Coastside area. Soils within this association type can be used for producing timber, and in clear, relatively level areas are adaptable to field crops.
- (4) Lobitos-Santa Lucia-Gazos - Sloping to very steep, grayish brown, very shallow to deep soils on sedimentary rocks under shrubs and grass with some trees. These soils occur on approximately 30% of the Coastside area. Range and pasture uses appear to be best for most of this soil association. Historically, some field and vegetable crops were grown within this association area, but due to slope steepness much sheet erosion has occurred limiting the soil's present productivity. Much of the land taken out of agricultural production has been invaded by Coyotebush or shrubs.
- (5) Tierra-Colma - Gently sloping to steep, dark colored, shallow to deep soils on high, dissected marine terraces; composed of weathered products of sedimentary rocks or alluvium from them; under grass and shrubs. These soils occur on approximately 9% of the Coastside area. They have been used for field and some vegetable crops but sheet and gully erosion have created severe problems. Much of the area within this soil association type formerly used for agriculture is now used for pasture.
- (6) Watsonville-Elkhorn - Nearly level to sloping, grayish, shallow to deep soils on low marine terraces of alluvium from sedimentary rocks or mixed sources; under grass. These soils occur on approximately 5% of the Coastside area. Most of the intensively cultivated soils on the Coastside are of this association type. These soils have a high fertility level and respond well to introduced fertilizers.
- (7) Tunitas-Lockwood - Nearly level to sloping, grayish or brownish deep soils on fans and flood plains of alluvium from various rocks; under grass with some shrubs and trees. These soils occur on approximately 5% of the Coastside land area. Soils in the Tunitas-Lockwood association occur primarily along alluvial fans and flood plains. Most of the soils are fertile and respond well to chemical fertilizers. They are intensively utilized for agriculture in areas of a suitable size where sufficient water is available.

SOIL ASSOCIATION MAP SAN MATEO AREA, CALIFORNIA

SOIL ASSOCIATIONS

SOILS OF UPLANDS



1 Hugo-Butano. Steep and very steep, brownish, moderately deep and deep soils on sedimentary rocks under coniferous forest.



2 Miramar-Sheridan. Steep and very steep, dark colored, shallow to deep soils on acid igneous rocks under shrubs or forest.



3 Sweeney-Mindegó. Sloping to very steep, dark colored, moderately deep soils on basic igneous rocks under grass or forest.



4 Lobitos-Santa Lucia-Gazos. Sloping to very steep, grayish brown, very shallow to deep soils on sedimentary rocks under shrubs and grass with some trees.

SOILS OF MARINE TERRACES, ALLUVIAL FANS, AND FLOOD PLAINS



5 Tierra-Colma. Gently sloping to steep, dark colored, shallow to deep soils on high, dissected marine terraces; composed of weathered products of sedimentary rocks or alluvium from them; under grass and shrubs.

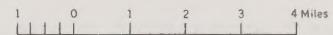


6 Watsonville-Elkhorn. Nearly level to sloping, grayish, shallow to deep soils on low marine terraces of alluvium from sedimentary rocks or mixed sources; under grass.

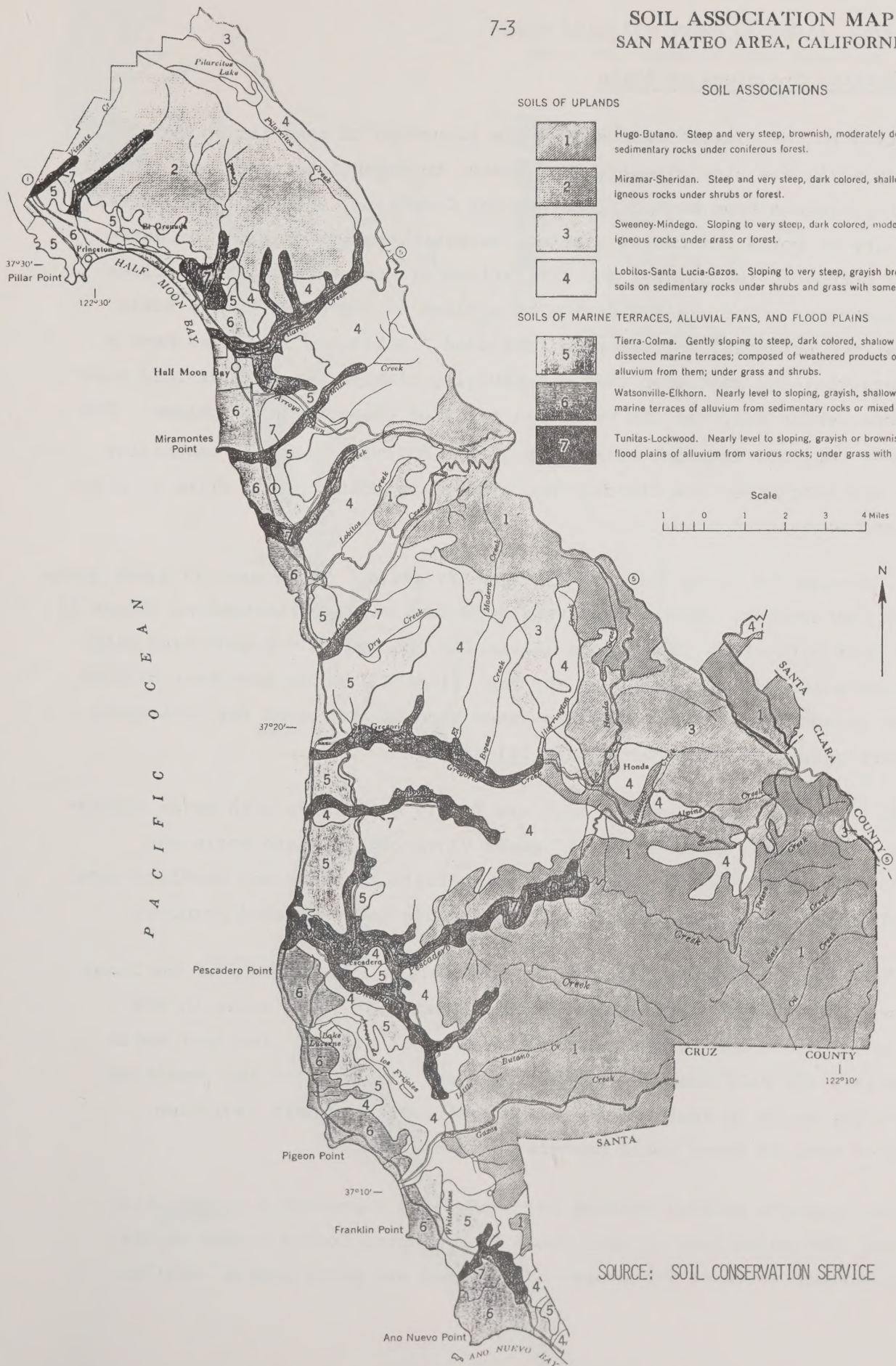


7 Tunitas-Lockwood. Nearly level to sloping, grayish or brownish deep soils on fans and flood plains of alluvium from various rocks; under grass with some shrubs and trees.

Scale



N



SOURCE: SOIL CONSERVATION SERVICE

B. Capability Groupings of Soils

In addition to the classification of soils according to association type, Coastside soils are also classified according to capability groupings. Seven capability classes have been defined for the Coastside, showing the relative suitability of soils for crops, grazing, forestry, and wildlife. For agricultural purposes, the hazards and limitations of use increase as the class number increases. The classification as applied to San Mateo County soils indicates the potential for use when irrigated. Soils not irrigated have a lower potential for most crop uses. Capability classes are also divided into subclasses, which indicate the principal types of conservation problems. The subclasses are for erosion, wetness, soil and climate. Lastly, capability classes and subclasses are divided into capability units nearly alike in plant growth and management needs.

The map on page 7-5 shows Class I, II, and III soils. These are all lands suitable for cultivation, ranging from very good land with no limitations (Class I), to good land with minor limitations (Class II), to moderately good land with major limitations (Class III). On the map, Class III soils have been divided into two categories: those which are rated good or very good for artichokes and Brussels sprouts, and other Class III lands.

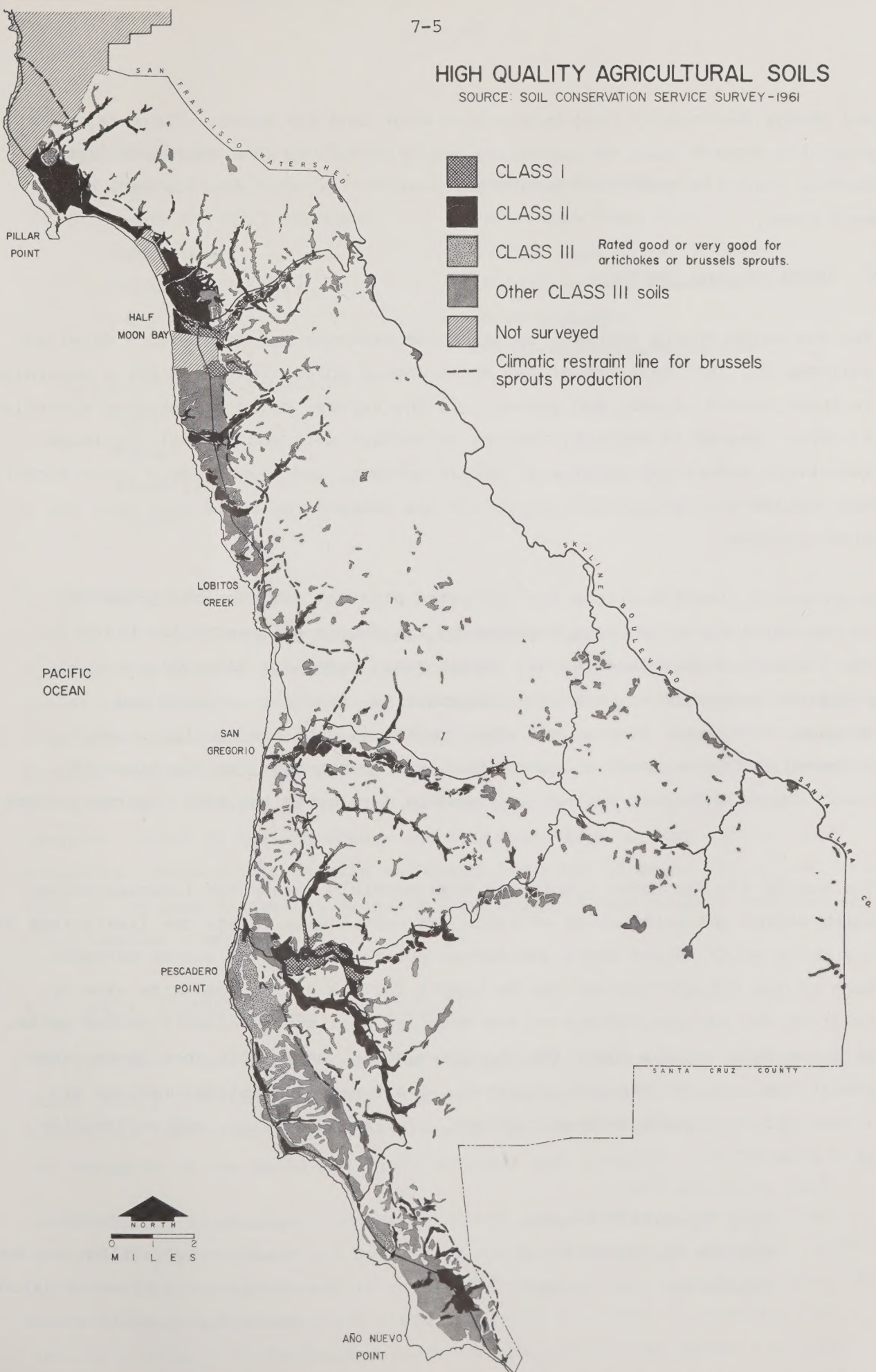
Class IV soils, not shown on the map, are fairly good lands with major limitations, for occasional cultivation. Classes VI through VII are soils not suitable for cultivation but which are appropriate to range and woodland uses. Class VIII soils are suitable mainly for wildlife and watershed purposes.

An examination of the soils map reveals that only a limited area of the Coast possesses high quality agricultural soils. Most high grade soils in the County occur along the Marine Terrace and alluvial plains. The best soils occur within the Half Moon Bay urbanizing area, with much of the remaining high quality soils in small scattered pockets. Due to their isolation, farming of many of these small parcels is infeasible.

San Mateo County's coastal beaches and sand dunes represent a unique soil resource. The major area of sand dunes in San Mateo County occurs on the Coastal Terrace south of Pescadero. Sand dunes are particularly fragile,

HIGH QUALITY AGRICULTURAL SOILS

SOURCE: SOIL CONSERVATION SERVICE SURVEY-1961



and change continually from interaction with wind and water. Their relative stability depends upon the anchoring vegetation. For this reason, extreme caution should be exercised before any unnatural alterations are made on sand dunes.

C. Detailed Soil Survey

The San Mateo County Resource Conservation District has developed a detailed soil map for the Coastside of San Mateo County which classifies soils according to their series, types, and phases. In the survey, soils are grouped according to depth, degree of erosion, texture of surface soil and subsoil, drainage qualities, underlying materials, alkali content, and slope. This classification has enabled soil scientists to predict the behavior of soils when used for a given purpose.

Engineering classifications for estimated physical and chemical properties of the soils have also been prepared by the Resource Conservation District for the series described above. Shrink-swell behavior, allowable soil pressure, permeability, salinity, corrosivity, depths to bedrock and seasonal high water tables, and other technical data are crucial to making informed decisions about the uses which are appropriate for any piece of land. These and other factors are used in developing the soil interpretations.

The survey for San Mateo County has made possible twenty-two interpretations which define the suitability of soils for septic uses, state the limitations of the soils which affect uses, and define potential areas of source material. Each of the interpretations can be mapped for the entire Coastside area by relating the interpretations to the detailed soil survey classification units. Unfortunately, except for a few characteristics, maps which show these interpretations have not yet been prepared. The twenty-two interpretations are listed below, divided into soil groups, limitation ratings, and suitability as a source:

Soil Groupings for --

Land Capability Classes
Pasture and Range Sites
Vegetative Soil Groups

Hydrologic Soil Groups
Woodland Suitability Groups
Unified Soil Classification
AASHO Soil Classification

Soil Limitation Ratings for --

Picnic Areas	Shrink-Swell Behavior
Lawns and Golf Fairways	Untreated Steel Pipe
Camp Areas	Septic Tank Filter Fields
Paths and Trails	Allowable Soil Pressure
Play Areas	Road Location
	Water-Retention Structure

Suitability as a Source of --

Sand
Gravel
Roadfill
Topsoil

D. Dynamic of Soils

Soil is distributed in an organized arrangement according to the influential combinations of five factors: (1) climate, (2) vegetation, (3) earthy parent materials, (4) relief, and (5) age of land form. Through eons of geological time, the forces of rainfall splash erosion, runoff, freezing, thawing, ground upthrusting, and wind have shaped land forms and soil conditions. All soil was initially rock. The rock is attacked by the physical and chemical forces of the atmosphere and is broken down to even smaller rock fragments. Vegetation, animals and micro-organisms react on the mineral content of the rock fragments, reducing them and producing organic residues and other complex compounds.

II. MAN'S INTERACTION WITH RESOURCE

Over the past one hundred years man has heavily exploited the soil resources of San Mateo County. Through farming, grazing, logging, mineral extractive activities, and placing urban settlements and roads, man has often ignored the dynamics of the soils and their physical and chemical limitations.

Early logging practices in San Mateo County, as elsewhere, involved clear-cutting of giant forests and burning of slash, resulting in wholesale destruction of soils through immediate removal of topsoils and ongoing erosion. Early agricultural practices ignored slope limitations leading to erosion. In addition, soils were depleted through overuse without the benefit of crop

rotation or allowing the land to lie fallow. Overgrazing made the land vulnerable to wind and water erosion and extensive gullying. Lastly, urban settlements were established in inappropriate locations such as the middle of flood plains or other hazardous areas, resulting in considerable property damage. Since erosion occurs wherever water, either rainfall or runoff, hits bare soil, some lands were spoiled by erosion due to excessive clearing or grading for urban uses.

In an effort to provide additional land for urbanization, extensive grading has occurred in the foothills along the Bayside of the County, creating problems of slope stability and erosion. Additionally, extensive areas along the Bay have been diked and filled to create new residential or industrial areas. Over the past several years, however this practice has been sharply curtailed by regulations of the Bay Conservation and Development Commission and Army Corps of Engineers.

At present, County policy has established that nonurban or open space uses shall prevail throughout most of the unincorporated Coastside area. Hence, the present and future use of the land for agricultural purposes is of considerable interest.

A. Agricultural Production

In 1972, County agricultural production amounted to almost \$43 million. This represented an increase of approximately \$5 million from the 1971 figure. The bulk of agricultural production value lies in flower and nursery crops, which in 1972 amounted to \$30.7 million or 72% of all agricultural output not including timber or salt production. Virtually all row or field crops grown in the County are produced on the Coastside. Although the Bayside has some flower growing greenhouses, especially in Daly City, Redwood City, and East Palo Alto, the Coastside is by far the dominant region in flower growing activities.

The following table drawn from the County Agricultural Commissioner's 1972 Agricultural Crop Report lists production values for major agricultural groupings in San Mateo County for 1972:

AGRICULTURAL PRODUCTION VALUES 1972

		Approximate Acreage
Vegetable Crops	\$ 9,845,500	3,871
Flower and Nursery Crops	30,717,400	1,543
Field Crops (except non-irrigated pasture)	684,260	7,136
Seed Crops	13,100	—
Fruit and Nut Crops	101,500	98
Livestock and Poultry	1,365,800	40,000
Livestock, Poultry and Apiary Products	89,150	—
TOTAL	42,816,710	—

San Mateo County ranks high within the State of California in the production of five agricultural commodities:

- (1) Artichokes. San Mateo County ranks second to Monterey County in State-wide production of artichokes. San Mateo County's 610 acres under production represents 5.5% of the State's total acreage, while its \$685,700 value of 1972 production represents 8.3% of the State's value. For a number of years the trend in value and acreage of artichokes has been declining in the County. The number of acres under artichoke production has declined to less than one third its extent 20 years ago. In the same period, the County's national position in this crop has declined from 22% of all production to approximately 5%. Among the reasons for artichokes' decline in the County are urban encroachment onto previously farmed lands in the Half Moon Bay area, limited water, and better soil and growing conditions in Monterey County.

- (2) Brussels Sprouts. San Mateo County ranks second to Santa Cruz County in State-wide production of Brussels sprouts. San Mateo County's 1260 acres under production represents 20.7% of the State's total acreage, while its \$1.6 million value of 1972 production represents 21.3% of the State's value. While the acreage in Brussels sprouts within the County has declined over the past 20 years, the production value has held up reasonably well. Since California produces 97% of the national Brussels sprouts crop, San Mateo County remains a major national force in this crop, with 20.7% of the national output.
- (3) Cut Flowers. San Mateo County ranks third to San Diego and Santa Clara Counties in State-wide production of cut flowers. San Mateo County's \$15.5 million of production represents 14.7% of the State's production value. San Mateo County has increased both indoor and outdoor cut flower production almost continuously over the past several years. Key flowers are: carnations, chrysanthemums, straw-flowers, marguerites, and roses. Factors which favor the County in cut flower production are its climate and proximity to a major international airport. California produces 16.5% of the national cut flower crop value; San Mateo County's production represents 2.4% of the total national production value
- (4) Nursery Products. San Mateo County ranks third to Los Angeles and Orange Counties in State-wide production of nursery products. San Mateo County's \$15.2 million of production represents 8.6% of the State's production value. As with cut flowers, San Mateo County has steadily increased the production of nursery products over the past several years. The major factor in this expansion has been the production of indoor potted plants, which has increased recently at the rate of approximately \$2 million per year. Other items included within the nursery category are indoor propagated plants and outdoor ornamental plants including Christmas trees. California produces 20.7% of the national nursery products' value; San Mateo County produces approximately 1.8% of the total national value.
- (5) Fresh Market Spinach. San Mateo County ranks third to Ventura and Monterey Counties in State-wide production of fresh market spinach. San Mateo County's comparatively small \$207,000 of production value

represents 5% of the total State value while its 148 acres in production represents 9.3% of the State acreage devoted to this crop. While spinach production still occupies a relatively small value and acreage position, spinach production more than doubled between 1971 and 1972 and can be expected to increase further in the future. California produces 38.7% of the national fresh market spinach supply; San Mateo County produces 2.0% of the total national output.

The map on page 7-12 shows the location of selected agricultural uses on the San Mateo County Coastside. This map, based largely on aerial photograph interpretations, could be subject to errors resulting from past agricultural use areas incorrectly interpreted as still being in agricultural use. However, it is a useful indicator of general patterns and magnitudes of agricultural use.

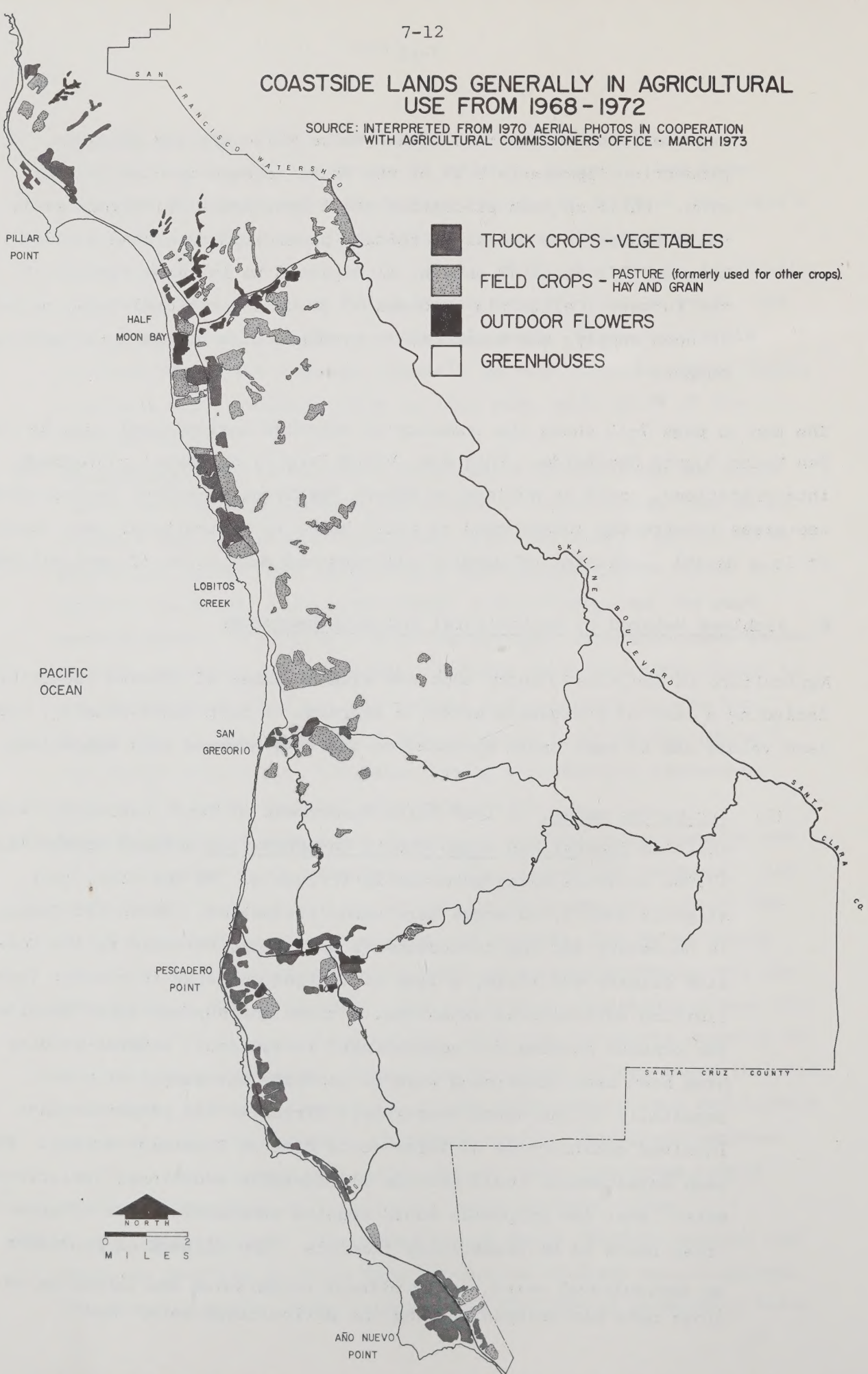
B. Problems Related to Agricultural and Soil Resources

Agriculture in San Mateo County contends with a number of adverse conditions, including a lack of irrigation water, a shortage of farm labor housing, high land values due to past urban speculation and some adverse soil conditions.

- (1) Irrigation water. A 1965 State Department of Water Resources Study entitled Coastal San Mateo County Investigation defined approximately 17,000 acres as being potentially irrigable. At the time, only slightly over 5,000 acres were under irrigation. Since irrigation is necessary for the production of most crops suitable to the Coastside climate and soils, a lack of irrigation water is a major factor limiting agricultural expansion. Ground and surface water provide the present sources for agricultural irrigation. Several studies have been made concerning ways to increase the supply of water, especially to the South Coastside. Virtually all proposals have involved construction of large-scale dams on Coastside creeks. While such developments could provide considerable additional agricultural water, most dam proposals would require substantial sale of water to urban users to be financially feasible. The dilemma of providing an agricultural water supply without encouraging the expansion of urban uses has delayed meeting the agricultural water need.

COASTSIDE LANDS GENERALLY IN AGRICULTURAL USE FROM 1968 - 1972

SOURCE: INTERPRETED FROM 1970 AERIAL PHOTOS IN COOPERATION
WITH AGRICULTURAL COMMISSIONERS' OFFICE - MARCH 1973



- (2) Farm Labor Housing. To produce its present agricultural output, several thousand farm laborers are employed on a part or full time basis in San Mateo County. Approximately one half of this labor force is migratory, working within the County during the March through November period. Unfortunately, there is a severe shortage of farm labor housing to accommodate these workers and their families. The existing farm labor housing stock is both quantitatively and qualitatively substandard, resulting in severe overcrowding and unsanitary conditions.

While there is debate over whether or not existing housing conditions have affected the supply of farm laborers in the County, there can be no doubt that further expansion of agriculture will require vastly increased and improved housing.

The County is currently in the process of studying the farm labor housing situation through a survey of farm laborers. A Farm Labor Housing Task Force has been established with the objective of developing new programs to better meet the needs of the County's farm laborers.

- (3) Land Values and Land Tenure Patterns. Due to the historic presumption that urbanization must inevitably displace agriculture as the dominant use on the Coastside, land values have traditionally reflected urban development potential, rather than permanent agricultural use. As a result, much of the land formerly owned by small farmers has been acquired by development oriented corporations or speculative interests.

A 1970 County Planning Department study examined land tenure patterns for approximately 46,000 privately owned acres outside the environs of the developing Half Moon Bay area, within three miles of the coast. Of the 190 ownerships identified within this area, 55% of the holdings were owner-operated, 36% were noncorporate-owned and leased to a farmer, and 9% were corporated-owned with the land leased to a farm operator.

In terms of the acreage in each category, 24% of the land was owner-operated, 35% noncorporate owned and leased, and 52% corporate owned and leased. Thus, approximately 75% of the land was leased by the owner to tenant farmers.

Whether tenure patterns will change following the comparatively recent designation of much of the land for exclusive agricultural uses or very low density residential uses remains to be seen. However, for Coastside agriculture to become a viable enterprise over the long run, a change of tenure from corporate "development company" ownership by resident farmers will be required as well as a reduction in land values from speculative levels based on urbanization potential to more realistic levels based on agricultural use potential. The same 1970 Planning Department study of agriculture showed that a farmer growing Brussels sprouts within an Agricultural Preserve could afford to pay approximately \$800 per acre for land. Much of the land suitable for Brussels sprouts is now selling for two to three times this amount.

Urbanization within an agricultural district almost inevitably increases values of adjoining properties and thereby diminishes the prospects for successful long-term agriculture in the area by increasing land assessments and thus land taxes. Direct conversion of agricultural land is not the only threat, however. The viability of agriculture is also threatened by the placement within an agricultural area of any inharmonious use including recreation, which might create problems of trespassing and increase the likelihood of trampled crops and vandalism.

- (4) Soil Conditions. As stated earlier, the best agricultural soils on the Coastside do not generally occur in large, contiguous blocks. Except for the Southern Coastal Terrace and Half Moon Bay areas, high quality soils occur in small scattered pockets. This tends to reduce the economic viability of San Mateo County agriculture vis-a-vis other counties.

Other factors hindering agriculture are some rockiness in shallower soils and some past soil depletion. However, most soils in San Mateo County lend themselves to restoration through chemical fertilizers, and depletion need not be considered a serious obstacle.

Generally speaking, modern conservation-minded farm practices including crop rotation are the rule in San Mateo County. Except for some overgrazing, there is little threat to agricultural lands

or soils from direct misuse. However, this has not always been the case. Much soil damage occurred during World War II when flax was grown in unsuitable locations within the County, resulting in considerable erosion and loss of topsoil. It has been estimated that the formation of one inch of topsoil under ideal conditions requires at least one hundred years. The land has not yet recovered from the mistakes made during the flax growing period.

III. EXISTING CONTROLS OVER RESOURCE

A. Federal Controls

The main Federal involvement in soils and agriculture is through the Soil Conservation Service, financed under the United States Department of Agriculture. The Soil Conservation Service has influence in the area of conservation, but only to the extent that assistance is locally requested. The main function of the local San Mateo County Resource Conservation District, which is headquartered in Half Moon Bay, is to provide information and technical assistance to landowners concerning the best use of their land consistent with modern conservation principles. In some instances, financial assistance is also available.

The major programs of the local district are:

- (1) Continuing soil map updating
- (2) Land management program development
- (3) Small flood control and stream erosion projects (PL566) at request of local interests and approval of Congress
- (4) Financial and technical assistance for individuals and local governments through engineering services, low interest loans and grants-in-aid for small agricultural projects.

The Resource Conservation District is composed of and controlled by local farmer members, whose Board approves and establishes priorities for technical staff. The Board has taxing powers which are not currently exercised.

B. State and Regional Controls

The State of California through a number of regional agencies exerts some control over soil and agricultural resources. These are:

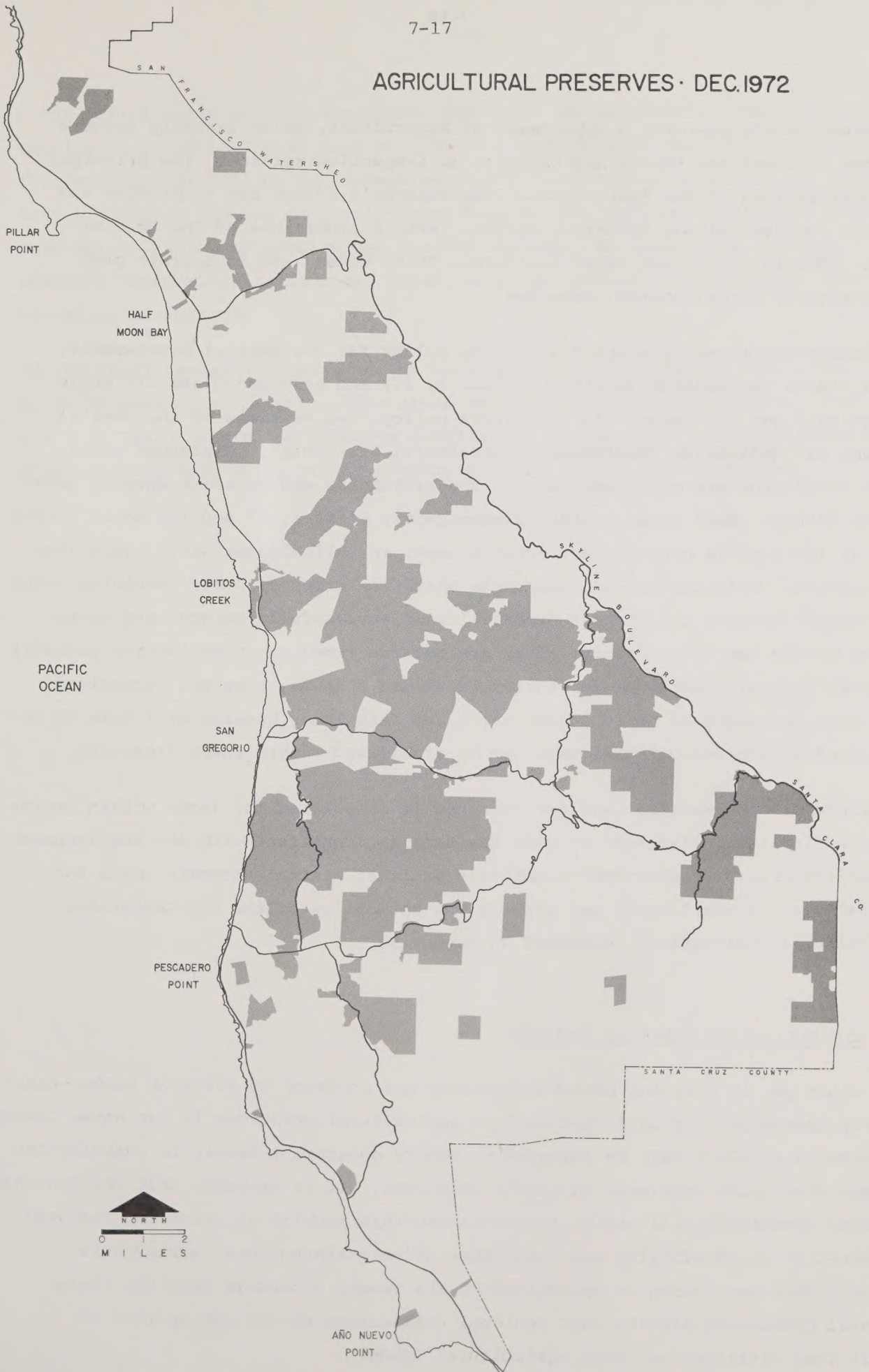
- (1) The Bay Conservation and Development Commission has a plan for the Bay, requires permits for Bay fill, and exercises some control over bay shore lands.
- (2) The State Coastal Commission and the Central Coast Regional Commission are developing a plan for the entire coastal area. The interim permit controls of the Regional Commission affect all major developments including housing, land divisions and grading in specified coastal areas.
- (3) The Bay Area Air Pollution Control District has control over agricultural burning.
- (4) The Regional Water Quality Control Board exerts control over major sources of water pollution and sources of sedimentation in streams.
- (5) The University of California operates the Agricultural Extension Service, which is partially County funded. Among other things, the Extension Service advises farmers on a wide range of agricultural matters, including problems of farm labor housing.

C. County Controls

The County has the primary responsibility to protect soil and agricultural resources. This responsibility is manifest in direct land use controls over most of the Coastside, including controls over grading, the removal of topsoils, and logging. The County has recently adopted strict land use controls over flood plains and other hazardous areas including fault rift zones and unstable soils. In addition, the County has imposed rigid density controls over developments in steeply sloped lands to prevent erosion.

San Mateo County has operated an active Agricultural Preserve program since the Williamson Act was passed. As of December, 1972, approximately 45,000 acres were protected by ten year Williamson Act contracts, and, among other things, restricted in density to one unit per 40 acres. Unfortunately, much of the land within agricultural preserves is not suitable for intensive row crops or even forestry, but rather it is in low intensity grazing use. Nevertheless, being within an Agricultural Preserve helps to make even low-intensity agricultural uses such as grazing more economical through reduced tax assessments. A map on page 7-17 shows lands under Agricultural Preserve Contracts.

AGRICULTURAL PRESERVES · DEC. 1972



San Mateo County operates a Department of Agriculture, which annually reports on crop acreages and values and operates an inspection service. The principal responsibilities of the Agricultural Commissioner's office are to promote and protect the agriculture industry, enforce certain provisions of the Agricultural, Administrative and other California State Codes, and to operate pest and predatory animal control programs.

The County has recently adopted a density policy for residential development, which limits the maximum density on Class I, II, and selected Class III soils to one unit per ten acres. In the matrix policy, two sections of the Coastal Terrace are defined as "Designated Agricultural Districts". Contained within their boundaries are well over half of the artichokes and Brussels sprouts grown in the County. Both areas contain predominantly Class I, II and III soils, where much of the land is now, or has recently been, in agricultural use. Designated Agricultural Districts include the areas where row crops or other specialty crops are thought to have the highest probability of successfully maintaining themselves within San Mateo County. They are outside immediate urbanization pressure and meet most preconditions for agricultural use. It is, however, recognized that some shortages of agricultural water and farm labor housing will have to be corrected before agricultural uses can be stabilized within these districts.

A maximum of one dwelling unit per 40 acres is stipulated for lands within Designated Agricultural Districts to keep the density consistent with the requirements of Agricultural Preserves and to maintain at least minimal economic units for agriculture. A small scale map showing the boundaries of the two Designated Agricultural Districts is contained on page 7-20

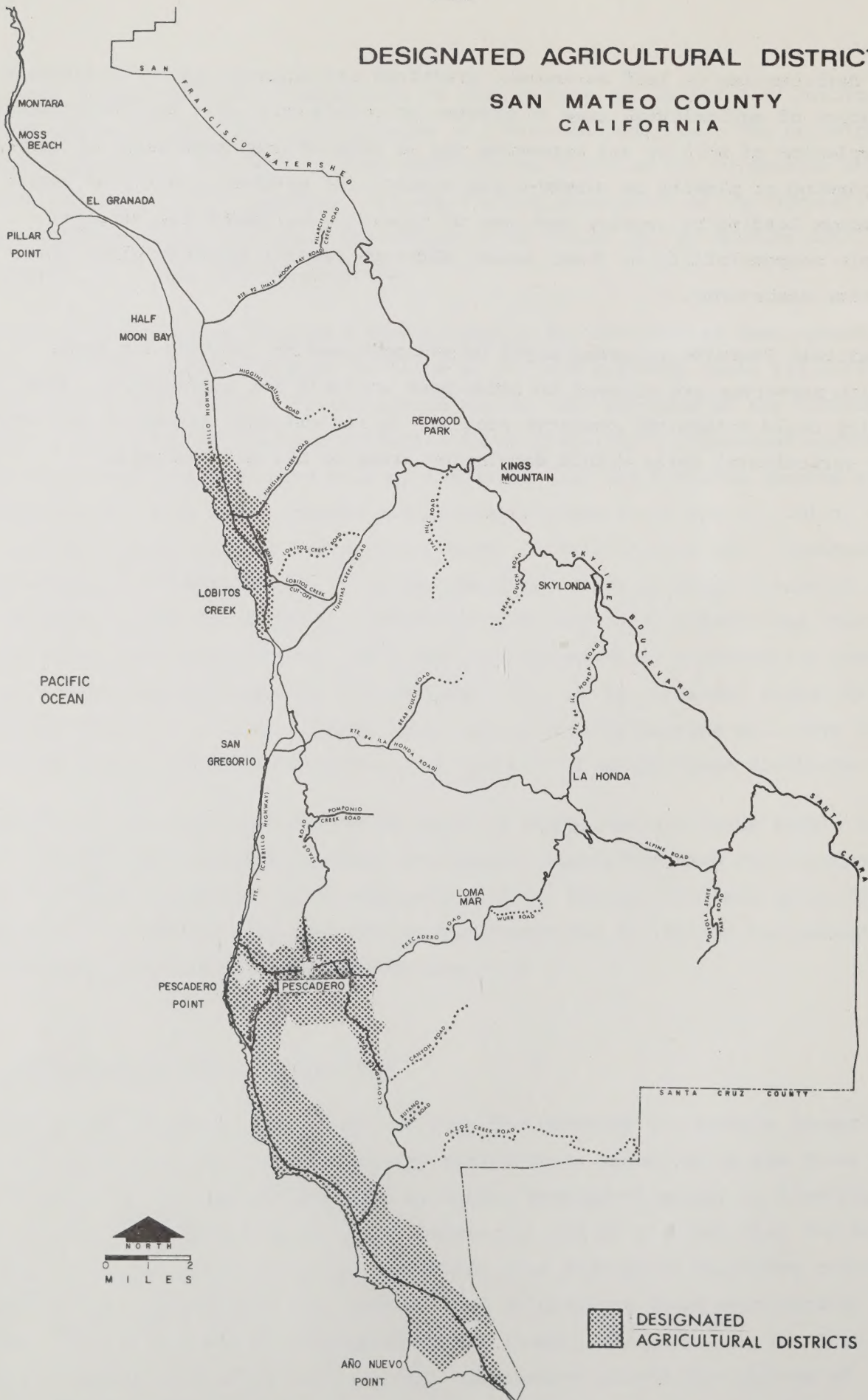
D. Limitations of Existing Controls

The major gap in existing controls involves the tendency to overlook larger-than-County interests in significant soil or agricultural resources in San Mateo County. Considerable effort must be expended by County government merely to identify the larger-than-local interests in County resources. It is probable that the Regional Coastal Commission will assist in overcoming this problem by providing regional perspective in identifying the importance of maintaining local agricultural lands. This conclusion is reinforced by the recent directive from the State Coastal Commission stating that regional commissions should not approve of small land divisions on large agricultural lands.

Other deficiencies in land management practices are apparent in the inadequate regulation of agricultural uses to prevent practices such as: (a) overgrazing, (b) depletion of soil by too intensive use or lack of crop rotation, (c) careless plowing or plowing on overly-steep slopes, (d) careless removal of native vegetation leading to erosion and loss of topsoil. No agency has assumed adequate responsibility in these areas, although several agencies offer consultative assistance.

Agricultural Preserve programs might be strengthened by limiting the lands in which preserves are allowed, to areas most suitable for agriculture. Such a policy could return the preserve program to its original intent of protecting prime agricultural soils within developing areas on the mid-Coastside.

DESIGNATED AGRICULTURAL DISTRICTS

SAN MATEO COUNTY
CALIFORNIA

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Chapter 8
MINERAL RESOURCES

MINERAL RESOURCES

This section of the Conservation Element deals with non-renewable earth resources which are utilized for materials and energy. This chapter builds on the minerals section of The Physical Setting of San Mateo County, which contains extensive background information on minerals. Unfortunately, the most current and comprehensive information concerning mineral resources in San Mateo County and the Bay Region will not be available until approximately December, 1973, when a new study being developed jointly by the California Division of Mines and Geology and the U.S. Geological Survey is scheduled to be released. This study will consist of a map and text to be entitled: San Francisco Bay Region Mineral Resources, by Edgar H. Bailey and Deborah Harden. Although it is premature to set firm policies regarding specific mineral resources until the data and analysis from this report become available, this section does attempt to develop management policies based on available information.

I. NATURE OF MINERAL RESOURCES IN SAN MATEO COUNTY

A. Description

Moderate quantities of semi-precious gems, mercury, gold, silver, platinum, oyster shells, bituminous rock and clay have been extracted in the County in the past. Principal mineral commodities presently extracted include salt, bromine, magnesium compounds, chromite, sand, crushed stone (sandstone, limestone, and granite), petroleum and natural gas.

B. Functional Uses

- (1) Minerals are used in the construction industry, the metal manufacturing industry and other industries such as salt production.
- (2) Mineral energy resources are used either directly or in a process to produce energy.

C. Availability of Resources

(1) Local Resources Related to National Demand

The factors that determine mineral extraction potential are geologic availability and economic demand. Geologic availability is based on the extent and geographic distribution of mineral elements or combinations of elements. Demand is based on the extent to which the mineral is used in industrial, commercial, and construction processes.

Assessment of geologic availability of a commodity requires basic knowledge of the geology, mineralogy, and geochemistry of that material, the geologic environments in which it occurs, and its concentration in those environments. The technology of exploration, mining, recovery, and use is founded upon this information. Studies of geologic availability are indispensable--at all levels of commerce, industry, and government--for any economic planning that considers the available supply or use of primary mineral commodities and their byproducts.

The table on page 8-3 compiled by the U.S. Bureau of Mines, contains appraisals of mineral supplies for commodities of major importance, stated in terms of the *minimum* anticipated cumulative demand for the period 1968-2000. "Demand" values are not represented as being specific goals to be reached. Rather, they are compiled to make available reliable geologic resource facts and assessments for use in public policy making and by the minerals industry. The resource indicated are for the most part *potential*, and their eventual availability as reserves is entirely dependent on continued geologic and technologic research as well as economic factors.

Study of the following table and the U.S. Mineral Resources study in its entirety leads to the conclusion that many San Mateo County minerals are not readily available to the United States in quantities adequate to last through even the end of this century. This indicates that heavy demand may be expected for most of the listed minerals and that efforts will be necessary to protect them wherever they occur.

POTENTIAL SAN MATEO COUNTY MINERAL RESOURCES¹
(In Relation to Minimum Anticipated
Cumulative Demand to Year 2000

Commodity	Minimum Anticipated Cumulative Demand, 1968-2000 ²	Identified Resources	Hypothetical Resources
Chromium	20,100,000 ST ³	D	D
Clay	2,813,500,000 ST	B	A
Gold	372,000,000 Tr. Oz	B	Not estimated.
Mercury	2,600,000 flasks	C	Not estimated.
Sand and gravel	56,800,000,000 ST	B	Not estimated
Silver	3,700,000,000 Tr. oz	B	B

1. Source: U.S. Mineral Resources, 1973

2. As estimated by U.S. Bureau of Mines, 1970

3. a. ST = short tons; Tr. oz = troy ounces

b. Identified resources: Includes reserves, and material other than reserves that are reasonably well known as to location, extent, and grade, that may be exploitable in the future under more favorable economic conditions or with improvements in technology.

c. Hypothetical resources: Undiscovered but geologically predictable deposits of materials similar to present identified resources.

A. Domestic resources are 2 and 10 times the MACD.

B. Domestic resources are approximately 75 percent to 2 times the MACD.

C. Domestic resources are approximately 10-35 percent of the MACD.

D. Domestic resources are less than 10 percent of the MACD.

- (2) Regional - Resource Availability. As shown on the following chart the major regional resources currently being utilized and likely to be exhausted (some by 1990), are limestone, shells, and the accompanying cement ingredients. Mineral water, salines and crushed stone are all classified as significant in use. The future of both salt production and crushed stones is uncertain due to increasing taxes and encroachment of urban development.

The remainder of the minerals present are either usable at high prices or are economically infeasible to utilize. Sand and gravel fall in the latter category to a certain degree but may change as urban development patterns shift.

The main sources of sand and gravel in the Bay Region are in Alameda County in the Livermore and Niles areas.

- (3) Local Resource Availability - The Physical Setting of San Mateo County (Chapter III) discusses the mineral resources in the County in some detail. The following additional comments on several of these resources may be made:

- a. Mercury. A rich but short-lived mine was developed at Emerald Lake in 1955. No mines are presently economically feasible.
- b. Platinum. Small quantities have been produced by placer mining in the vicinity of Pescadero Beach.
- c. Magnesium compounds. The recovery of magnesium salts from sea water is carried out near Point San Bruno in South San Francisco.
- d. Oyster Shells. Shells, as a source of calcium carbonate, silica, alumina and iron used in cement production, are found in the mud from ten to twenty feet deep in the southern portion of San Francisco Bay.

The table on page 8-6 indicates that quantities of some of the minerals produced in San Mateo County decreased, although the value if inflation is taken into account, did not substantially change in the five year period.

MINERAL RESOURCES OF THE SAN FRANCISCO BAY REGION BY COUNTIES ^a

Commodity	San Mateo	Alameda	Contra Costa	Marin	Santa Clara
Asbestos		2	1		
Chromite	1	2	1	1	2
Clay	1	2	3	3	2
Coal		1	1		
Copper		1	1	1	1
Diatomite			3		
Expansible shale	1	3	3	3	1
Gemstones	2	1	1	2	2
Limestone and shells	5	5	3	1	5
Magnesite		1			1
Manganese		2	1	1	2
Mercury	1	1	2	3	4
Mineral water	4		2	2	4
Oil & gas	2	1	5	1	1
Peat			4		1
Pumice			2		
Pyrite		1			
Salines	4	4		2	3
Sand & gravel	1	4	1	1	3
Sands, specialty	1	1	3		
Stone, crushed and broken	4	3	3	3	3
Stone, dimension	1	1	1	3	1
Stone, ornamental				1	
Sulphur, byproducts			3		

a. San Francisco Bay Region Mineral Resources, Baily and Marder, In preparation

- 1 Occurrence, not likely to be used
- 2 Small resource, or useable only at high price
- 3 Significant resource not being used, but likely to be used within 20 years
- 4 Significant resource being used
- 5 Significant resource being used, but likely to be exhausted, seriously depleted, or uneconomic in 20 years

MINERAL PRODUCTION IN SAN MATEO COUNTY

Commodity	Unit	1966 ¹		1971 ²	
		Quantity	Value	Quantity	Value
Natural gas	Thousand cubic feet	2,105	-----	-----	-----
Petroleum	42 gallon barrel	39,000	-----	18,000	\$ 49,000
Stone	Short Ton	-----	-----	1,176,000	1,713,000
Sand & gravel ^b	" "	-----	-----	-----	-----
Unapportioned	-----		\$ 14,638,201 ^a	-----	17,175,000 ^a
TOTAL VALUE			\$ 14,638,201		\$ 18,937,000

a) Cement, clays, magnesium compounds, salt, sand and gravel, stone, natural gas, petroleum.

b) In 1964, the most recent year for which separate data for sand and gravel were reported, 193,000 short tons were produced, valued at \$175,000.³

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1. The Physical Setting of San Mateo County, Regional Planning Committee of San Mateo County, 1968.
 2. California Geology, April, 1973.
 3. Mineral Information Service, California Division of Mines and Geology, January, 1966.

There are five active quarries, (three in unincorporated areas, two in incorporated areas). Of the five, one is family owned and produces minimally, while the largest is reportedly considering phasing out due to economic and political pressures. However, the County Planning Commission approved six quarry permits in 1971-1972.

II. MAN'S INTERACTION WITH RESOURCE

A. Beneficial Uses

Beneficial uses of mineral resources derive from their use as materials and as energy sources. The local availability of building construction materials affects the public and private cost of urbanization and capital improvements in a given location. Many locational decisions in the industrial economy are based in part on the availability of minerals and their byproducts. Our life style and technological culture depends on their use and availability.

Minerals are non-renewable, however, necessitating technological advancement in exploration and mining, and the development of substitute materials and processes when required by insufficient supply.

A description of commercial uses for San Mateo County minerals is contained in The Physical Setting of San Mateo County. However, uses for the following locally found minerals are not discussed in this document:

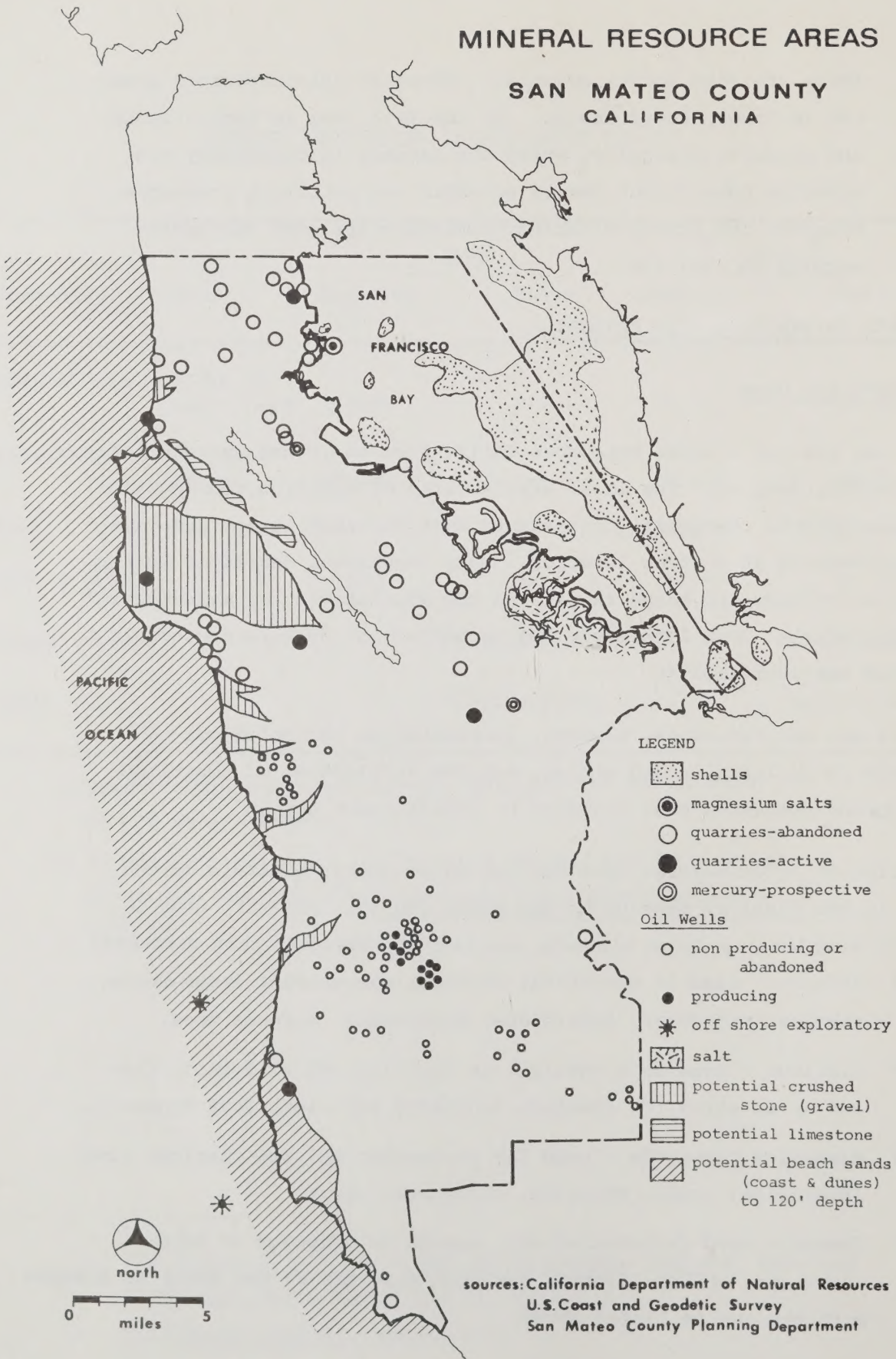
- (1) Mercury - used in electrical devices, measurement instruments, chemical processes, fungicides, germicides, defense uses.
- (2) Platinum - used as a catalyst in gasoline and acid production and as an alloy for jewelry, dentistry and electrical apparatus.
- (3) Magnesium Compounds - used for pharmaceutical and chemical uses, (hydroxide, oxide, chloride, carbonate, etc.)
- (4) Cement - used in construction, cement is composed of calcium carbonate, silica, alumina and iron provided by mud which is dredged with the shells listed above.

B. Impacts

The extraction of mineral commodities as a land use activity may produce

MINERAL RESOURCE AREAS

SAN MATEO COUNTY CALIFORNIA



a wide range of environmental effects, including air, noise and water pollution and aesthetic damage, depending on the method of extraction. Reclamation of quarry sites by reforestation, and control of environmental impacts, although desirable, raises the cost of mineral commodities to the consumer. "Sequential multiple use", that is, an alternative and productive use of the land following mineral extraction, is becoming a common practice.

III. EXISTING CONTROLS AND RESPONSIBILITIES

A. Federal

- (1) U. S. Bureau of Mines prepares bulletins, reports, and surveys of the mining industry.
- (2) U. S. Geological Survey prepares publications, surveys, and circulars on geological concerns.

B. State

- (1) California Division of Oil and Gas reports and maps oil fields and regulates drilling and production processes.
- (2) California Division of Mines and Geology collects, develops and disseminates information on the geology and mineral resources of the State; inventories the mineral resources of the State; makes county-wide surveys of mineral resource potential; publishes annual mineral production statistics by counties and prepares annual reviews of the mineral industry; encourages the application of geologic information in making land use decisions and in management of the earth's terrain; advises administrative branches of government on geologic and mineral problems; publishes and distributes articles on the geology and minerals of the State.
- (3) California Public Utilities Commission regulates rates and service of more than 1500 privately owned utilities and transportation companies, and thereby influences decisions on the type and quantity of mineral energy which is converted to electrical power for the entire State.

C. Local

- (1) The County has a quarry ordinance governing the extraction of mineral resources, and a separate oil well drilling ordinance. These ordinances require the issuance of annual permits subject

to conditional approval.

- (2) The County assesses known mineral resources independent of surface land values.

IV. PROBLEMS AND/OR ISSUES REGARDING THE RESOURCE

A. Gaps in Controls Over Resource

- (1) Informational gaps lead to control gaps. Environmental impact statements for mines should include a scarcity of minerals report.
- (2) The importance of local government planning for mineral extraction may be overlooked in some areas because of the absence of actively worked mineral deposits in these areas.

However, history indicates the possibility that technological changes or changes in the value of minerals in the future may make currently non-commercial mineral deposits economically feasible.

B. Competition Between Conflicting Uses

The distinctive characteristic of mineral economics which creates problems both in planning for land utilization and in resource development activities is that once a mineral resource is exhausted it cannot be replaced.

The pressures of urbanization in San Mateo County have had considerable impact on mining activities. For the most part, the encroachment of urbanization has caused many on-shore operations to be phased out due to actual physical displacement and negative environmental impact. As coastal metropolitan areas continue to expand and encroach on on-shore deposits, off-shore areas become targets for exploration. The possible impact of off-shore resource development must be given some consideration in future planning policies. With the depletion of high-grade mineral deposits, it will be necessary to develop lower-grade deposits, particularly those that give promise of yielding more than one commodity. Since many mineral extraction activities are incompatible with most types of urban development, there is a pressing need to identify resource locations, hasten extraction, or protect resource sites which could be pre-empted by urbanization.

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Chapter **9**
CULTURAL RESOURCES

CULTURAL RESOURCES

A. HISTORICAL RESOURCES

Historical resources of San Mateo County are covered in the Parks and Open Space Element of the General Plan as adopted in 1969, and, therefore, will not be included in this section.

B. ARCHAEOLOGICAL RESOURCES

I. NATURE OF THE RESOURCE IN SAN MATEO COUNTY

The majority of known archaeological sites within the County and the Bay Area are "middens", i.e., deposits which are an accumulation of refuse of prehistoric people often consisting of shells, soil, ash, charcoal lenses, rock clusters, bones, skeletons, and artifacts. Typical artifacts include mortars and pestles, hammerstones, hearth stones, projectile points, net sinkers, awls for basket making, whistles, tobacco pipes, charmstones, and shell beads and ornaments. Pottery, textiles, and metal work were nonexistent.

Shellmounds, or middens, are a worldwide phenomenon, and exist along the North American continent from Panama to Alaska. The largest middens which have been excavated in the Bay Area have been found in Emeryville, Richmond, and Alameda Creek, whereas San Mateo County's are in the small to medium size range. Bay Area mounds range in size at the base from about 30 to 600 feet in diameter, and height ranges from a few inches to about 30 feet. The estimated age of origin of Bay Area middens is in the 3000 to 4000 year range, and the oldest within San Mateo County are at least 3000 years old. Some sites were occupied in historic times, such as those discovered by Portolá and other explorers, or the midden near the Sanchez Adobe which was occupied by Indians connected with the mission.

It is believed that the earliest people who inhabited the Bay Area lived here about 5000 years ago. It is possible that the original inhabitants of the Bay Area may have been ancestors of the Costonoans who were the most recent Indian group. One theory suggests that the area was originally occupied by

tribes of the Hokan linguistic family. There are indications of two distinct cultures existing between 1500 and 1000 B.C., i.e., the Bay and Delta cultures, which later converged. Also, there is a possibility that the culture of prehistoric people of the Bay Area was derived from Southern California coastal people.

Although 156 archaeological sites have been recorded to date within the County, it has been estimated that several times this number may actually exist. Some were discovered by late nineteenth and early twentieth century archaeologists at locations such as Pillar Point, Coyote Point, San Bruno Point, Sierra Point, Visitacion Valley, and along San Mateo and San Francisquito Creeks. Many of the middens were located within fifty feet of the original shoreline of San Francisco Bay, usually by streams at the upper reaches of tidewaters. Few Bay Area sites are located on the coast-side, but coastal middens have been found in San Mateo County as far south as Año Nuevo. Most of the coastal middens are situated near mouths of streams, generally within a few hundred yards of the shore. Some middens are located in the foothills, usually near a spring, and some are located on ridges among *Sequoia* trees. A few caves may also have been occupied by prehistoric people. The primary locational determinants were presence of fresh water, firewood, protection from the wind, and easy access to food sources. Food sources consisted primarily of shellfish, but also included mammals, fish, birds, seeds, bulbs, berries, and marsh plants which were also used for basket making and the construction of boats.

Many of the middens represent village sites, and house floors of hard-packed clay have been uncovered. It has been estimated that the average village could support 30 people, whereas one large village in the East Bay probably supported 100 persons. Evidence has been found to indicate that many sites were occupied on a year-round basis, whereas others appear to have been utilized as temporary or seasonal campsites. Some sites functioned as summer camps, for in relatively recent times the Costanoan Indians retreated to the hills during the summer. Inhabitants of campsites in the hills of San Mateo County obtained food from the Bay and the Ocean. The majority of coastal San Mateo County sites appear to have been special-purpose sites for processing shellfish. They apparently were not occupied seasonally and perhaps rarely on an overnight basis as evidenced by a dearth of artifacts. Because of noncultural deposits of earth and

sand which have been found between layers of midden in Bay Area sites, it is believed that some mounds were evacuated for a period of time.

There is evidence of mobility and trading to be found in archaeological sites. Artifacts have been found which were fashioned from rocks and minerals not available locally, e.g., obsidian for which the nearest source was Sonoma County. The Costanoans traded with other tribes in a Central California trade network, for they manufactured *Olivella* shell beads for this purpose. Also, the coastal San Mateo County middens may have been processing sites for economic reasons. Shells have been found in some middens that probably were not available in the immediate vicinity, and which may indicate a network of travel or trade routes. Contents of some Bay Area mounds, including San Mateo County sites, indicate that people engaged in hunting, fowling, gathering, and fishing. Boats constructed of tule were sometimes used for fishing. Bones of vertebrates have been found in most sites, e.g., elk, antelope, bear, otter, whale, and sting ray. It is important to archaeologists to determine the interrelationship among sites and, therefore, all sites are valuable for data collection purposes.

The number of artifacts per cubic yard varies considerably among Bay Area sites and has no particular significance relative to the scientific value of a site. Contents of middens do not suggest drastic cultural changes over a long period of time. Evidence of a change in mortuary customs, however, from interment to cremation is a widespread phenomenon. It is important to note that the significance of a midden usually cannot be determined until it has been excavated and, therefore, it is not possible to prejudge the importance of unexcavated sites within San Mateo County.

II. MAN'S INTERACTION WITH RESOURCE

About half of the known archaeological sites within the County have been destroyed within the past 75 years from agricultural use, vandalism, diking of salt ponds, and urban development. Structures such as city halls, factories, farmsteads, and barns have been built atop Peninsula sites, and farmers have cultivated and plowed them to level their land or because they believed that the sites yielded fertile soil. The raw material of some has been used as ballast for roads and sidewalks, and for fertilizer throughout much of the twentieth century. Another source of destruction has been artifact hunters who had no interest in scientific data

collection. Land subsidence around the rim of the Bay and/or siltation from natural or man-made causes has also caused destruction. On the coast-side natural cliff erosion, as well as aggravation by man's activities such as irrigation, has affected a few sites.

Available literature on San Mateo County middens is limited. Unfortunately, the methodology employed in most excavations until recently has resulted in little systematic data collection. The potential educational value of archaeological sites, however, has been enhanced by programs sponsored by the U. S. Department of Health, Education and Welfare, and the National Park Service of the U. S. Department of the Interior. Included among these programs are: 1) National Environmental Study Area (NESA) which can include any kind of environmental study; 2) the Environmental Living Program that utilizes classroom materials of "NEED", and which uses State Parks and national historic sites for field study; and, 3) National Environmental Education Development (NEED) that provides supportive classroom materials which can be made available to all school systems. Examples of Environmental Living Program sites in the Bay Area include the Petaluma Adobe State Historic Park, the John Muir National Historic Site in Martinez, the Fort Point National Historic Site and the Hyde Street Pier in San Francisco. Among sites maintained by the Miwok Archaeological Preserve in Marin County, one is used as an outdoor educational center and museum. Potential sites in San Mateo County might include the Sanchez Adobe, the archaeological sites at Coyote Point, or a south coast midden where an Indian village might be reconstructed. Classroom work precedes and follows a visit to a site on a daytime or overnight basis where pupils recreate the past. According to NPS personnel, a site of national significance is not required to give children a meaningful experience in local history.

Some sites could become tourist attractions, especially if other amenities are present such as scenic value, water, or unusual vegetation. Some pre-historic sites also have historical value because of the presence of a historic structure, a heritage tree, or the site was the location of a historic event such as Portolá expedition campsites.

III. EXISTING CONTROLS OVER RESOURCES

A. Federal Controls

The most significant federal control over cultural resources is the

National Environmental Policy Act of 1969 (PL 91-190). Under this Act, Federal agencies are required to consult with the National Park Service regarding archaeological impact. In conjunction with projects receiving federal funding, an environmental impact statement (EIS), as required under NEPA, would be reviewed by ABAG in its capacity as the metropolitan clearinghouse for A-95 review.

Other federal legislation affording some protection of archaeological sites includes: the Antiquities Act of 1906; the Historic Sites Act of 1935; the Historic Preservation Act of 1966; the Reservoir Salvage Act of 1960; the Federal-Aid Highway Acts of 1956, 1966, and 1968; the National Transportation Act of 1966; and, to a limited extent, the Housing Act of 1949 through the 1969 Housing and Urban Development Act.

The Historic Sites Act of 1935 charged the National Park Service with nationwide responsibility for cultural resources. It permitted the NPS to make a survey of sites of national value anywhere in the United States. The Act did not restrict the NPS to lands under federal ownership, or to sites to be destroyed through federal funding. It did permit the NPS to make cooperative agreements with state and local governments, associations, or individuals to preserve, maintain, or operate such sites for public use regardless of ownership.

The Historic Preservation Act of 1966 provided for expansion and maintenance of a National Register of cultural resources; granting of funds to states for preparation of comprehensive statewide historic surveys and plans; and, establishment of a matching grant-in-aid program to states for preservation of properties significant in American history. Unfortunately, listing a site on the National Register does not assure that it will be protected. The Act does provide that federal funds or authority cannot be used to adversely affect a site on the National Register, and this has been interpreted to include federal funds to individual farmers for agricultural operations, and Soil Conservation Service programs.

B. State Controls

The agency with primary responsibility for archaeological salvage work is the State Department of Parks and Recreation. Any State agency,

particularly the State Department of Water Resources, may authorize the Department of Parks and Recreation to make an archaeological survey of sites to be damaged by construction. The Department also cooperates with the Division of Highways, but the latter agency administers the Highway Salvage Program and makes contracts with individual institutions. Several branches of the University of California, as well as several California state universities, are qualified to conduct surveys.

State legislation is not adequate to protect archaeological and paleontological sites, for designation as a state historical site does not protect a site from destruction. In San Mateo County, the Bay Conservation and Development Commission might afford some protection to remaining Bayside sites, although the shoreline has changed drastically since the shellmounds were formed. On the Coastside, several sites lie within State Park and Beach lands.

It is a misdemeanor to disturb archaeological and paleontological sites on State-owned property without a permit (Resources Code, Chap. 1.7, Sec 5097). Furthermore, the Penal Code (Sec. 633.5) states that anyone who willfully destroys or defaces archaeological materials on private or public lands, except the owner, is guilty of a misdemeanor.

C. Local Controls

At the county level, the environmental impact report, as required under the California Environmental Quality Act (CEQA), is the only available tool at this time for requesting an archaeological survey. The CEQA guidelines [Sec. 15011(b)] contain the State policy as declared by the Legislature that all action necessary shall be taken to provide the people with "historic environmental qualities". Section 15101(1) of the CEQA guidelines states that demolition and removal of buildings and related structures are categorically exempt from an environmental impact report except those which "...are of historical, archaeological, or architectural consequence as officially designated by federal, State or local governmental action."

Prior to the formulation of CEQA guidelines to include nongovernmental projects, the County was fortunate in having several private developers who were generous enough to provide funds for archaeological excavations on their properties prior to construction. Mitigation measures are now required under CEQA to mitigate adverse impacts on archaeological sites as exemplified by the California Superior Court decision regarding the site of the proposed Governor's mansion.

It is interesting to note that several California counties including Marin, Inyo, Del Norte, Humboldt, Mendocino, San Diego, and Ventura, have ordinances pertaining to archaeological sites. Other counties, as well as some cities, have proposed legislation to protect prehistoric sites. Marin County's Ordinance No. 1589 declares that information contained in archaeological shellmounds is of public concern, and uncontrolled disturbance or excavation of middens is unlawful. A permit to excavate must be obtained from the Department of Public Works, and the Board of Supervisors designates an institution of higher learning or other qualified organization, as liaison to the Department of Public Works. If, during the course of construction work, a subdivider or contractor encounters a midden, the work is to be halted until the ordinance has been complied with.

A statement pointing to the need for stronger controls over San Mateo County's coastal sites appeared in the Treganza Anthropology Museum Papers on San Mateo County Archaeology. Archaeologist Thomas Jackson said:

"It is now clear that this locality will be crucial to the understanding of Costanoan prehistory, particularly in light of the tragic obliteration of the archaeological record in adjacent localities (e.g., the San Francisco Bay shore)."

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Chapter **10**
SCENIC RESOURCES

SCENIC RESOURCES

I. NATURE OF SCENIC RESOURCES IN SAN MATEO COUNTY

San Mateo County is generally considered to be in the mainstream of Bay Area regional growth. Indeed, the bayside cities comprise a major link in an almost unbroken urban corridor extending from San Francisco into the rapidly-growing Santa Clara Valley to the south. Juxtaposed with the urbanized bayside, however, is the predominantly rural coastside, lying between the Coast Range and the Pacific Ocean, comprising two-thirds of the land area of the County. This area, largely unincorporated, has retained its rural character and natural setting, yet is accessible by an hour's drive from some of the most intensively-urbanized portions of the Bay Area.

The natural areas of the San Mateo County Coastside contain such diverse and contrasting landscape features as the Pacific Ocean, wide coastal terraces, the abrupt topography of the Santa Cruz Mountains, unusual vegetative types such as the redwood groves, broad grasslands and brush lands, streams, reservoirs, marshlands and areas of historic and cultural interest.

The visual contrast and diversity of San Mateo County's major natural areas predominantly on the Coastside, and their close proximity to and contrast with urban environments establishes their importance as scenic resources to the County and the Bay Area community as a whole.

A. Identification of Scenic Resources

Identification of San Mateo County's scenic resources is a necessary step toward their protection. The natural scenic quality of the County is created by the intense interrelationships of the County's 1) scenic landscape characteristics, 2) landscape features, and 3) viewsheds.

- (1) Scenic Landscape Characteristics - The varied landscape characteristics of San Mateo County are discussed below, and many are shown on the map on page 10-2.

- skylines are the very sensitive junctions between land masses and the sky throughout the County.



- Ridgelines are the tops of hills or hillocks which are normally viewed against a background of other hills.
- Land and Water Junctions include beaches, stream beds, and grass/marsh areas surrounding lakes and reservoirs.
- Rock, Soil and Vegetative Edges exhibit and outline the variety and contrast in the types of soil, rock and vegetation found in the County. Some examples would be where grasslands meet forested areas or where rock outcrops meet with surrounding vegetative surfaces or one type of vegetation meets and gives way to other vegetative types. (See Plate II, Forest Resources Study.)
- Vegetative, Soil or Rock Masses are the large areas of vegetation soil and rock which form the colored and textured surfaces which comprise the natural scenic mosaic of the County.

(2) Landscape Features - In addition to the County's landscape characteristics, the following landscape features further define San Mateo County's scenic resources (see page 10-2):

- Unique Topographic Forms including vertical exposed rock faces, steep areas of noticeable slope, noticeable rock strata and alluvial areas in contrast with strong slopes.
- Unique Vegetative Forms including unique plant communities, large individual plants, large plant groves, and uncommon plants in the County.
- Water Forms including streams, springs, percolation areas (e.g., marshes, swamps, etc.) waterfalls, lakes, reservoirs and ocean/beach areas.
- Man-made Forms including State historical sites, structures of historical or architectural interest, and interesting and creative engineering constructs such as wooden trestles, old barns, etc. (See Chapter 9, Cultural Resources.)
- Scenic Areas including those areas within the County which are, through a combination of landscape forms, deemed scenic. (See Appendix for proposed Scenic Area designation techniques.)

(3) Viewsheds - Viewsheds are the natural scenic lands viewed from scenic corridors defined as through and recreation-oriented roads, trails and mass transit routes.

II. MAN'S INTERACTION WITH SAN MATEO COUNTY'S SCENIC RESOURCES

The scenic resources of the County are subject to man-made alterations, such as road construction, timber harvesting, mining and housing construction. These types of alterations historically have had long-term impact upon the environment. There has been great resistance to removing these alterations after they have been constructed because of the large initial capital outlays involved and the great expense of returning a developed area to its original natural state.

As alterations to the natural environment increase, associated increases in air pollution and noise also occur.¹ The cumulative effect of these changes has been severe degradation of natural scenic resources in many counties.

In order to preserve the scenic quality of San Mateo County, the visual impact of projected changes must be anticipated, and their characteristics modified to fit comfortably with the existing scenic character of the County. Proficient management of scenic resources can take place if: 1) the vulnerability of the typical landscape characteristics, features and viewsheds² within the County are determined, 2) existing scenic controls are analyzed for their efficacy, 3) issues regarding the scenic resources of the County are identified, and 4) scenic resource conservation goals and objectives are developed to direct the modification of the visual impact of proposed projects.

A. Landscape Vulnerability (Sensitivity to Alteration)³

The vulnerable portions of the County's scenic areas are determined by their natural landscape characteristics, features and viewsheds, and their location within the landscape.

¹ A Guide to Air Pollution Control, Environmental Protection Agency, 1972

² Visual Vulnerability of Forest Landscapes, Southwest Forest and Range Station, United States Department of Agriculture

³ Alterations are defined as any existing or proposed use within the unincorporated areas of the County.

The vulnerability of typical landscape characteristics, features, and locations, and their relationship to public viewsheds and the scenic quality of the County are discussed below.

1) Landscape Characteristic Vulnerability

- a. Skylines and ridgelines are the most sensitive landscape characteristics because they can display any alteration to the natural environment over a wide area, affecting many public viewsheds within the County.
- b. Land and water edges are also sensitive to changes. Flat, low-level vegetation commonly encountered at the junction of land forms and water, does not provide any camouflage for man-made alterations to the natural environment.
- c. Rock, soil and vegetative edges which occur in the landscape highlight and mark the contrast in major plant, rock and soil areas in the County. Extensive penetration of development into edges would detract from these natural contrast points.
- d. Vegetative, soil and rock masses form the primary visual patterns throughout the County. Development can be integrated into these areas if it conforms to natural vegetative, soil, and rock patterns.

2) Unique Feature Vulnerability

Unique topographic, vegetative, water and man-made forms, and scenic areas are subject to disruption and alteration. Structures located on, in or near a unique scenic form or area can be visually obvious, and in the case of unique forms, structures can be destructive, permanently removing or covering the form, thus affecting viewsheds.

3) Locational Vulnerability

The topographic location of scenic forms and characteristics within San Mateo County's natural environment and public viewsheds is also important. The higher the location of scenic features, forms or landscape characteristics, the more vulnerable they become. The most conspicuous location for any man-made alteration such as a road, a timber harvesting operation, or a house,

would be a location involving skylines, silhouettes and ridge tops. Alterations in these areas are obvious because the high degree of contrast, where the sky and land masses meet, attracts visual attention. Also, the high location of skylines and ridgelines causes any alteration to be seen from a wide area. A visually less-obvious location for any proposed alteration would be some distance down the slope from a ridgeline or skyline area. A mid-slope location, for example, would not be seen from as wide an area as a skyline location.

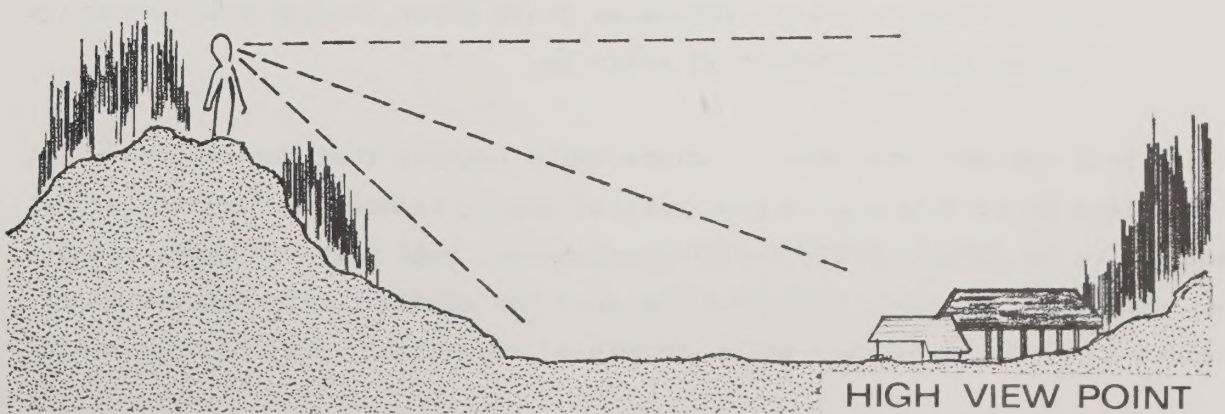
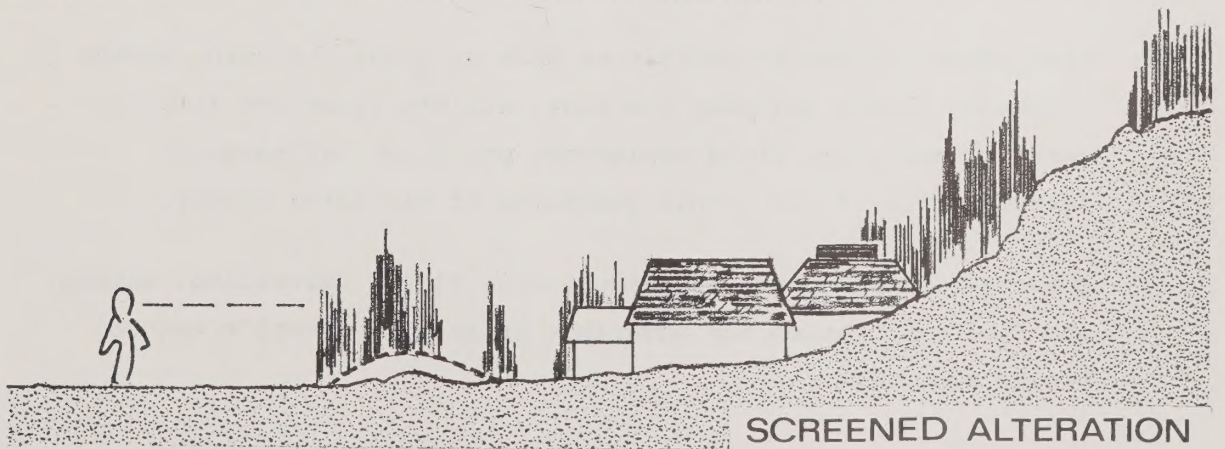
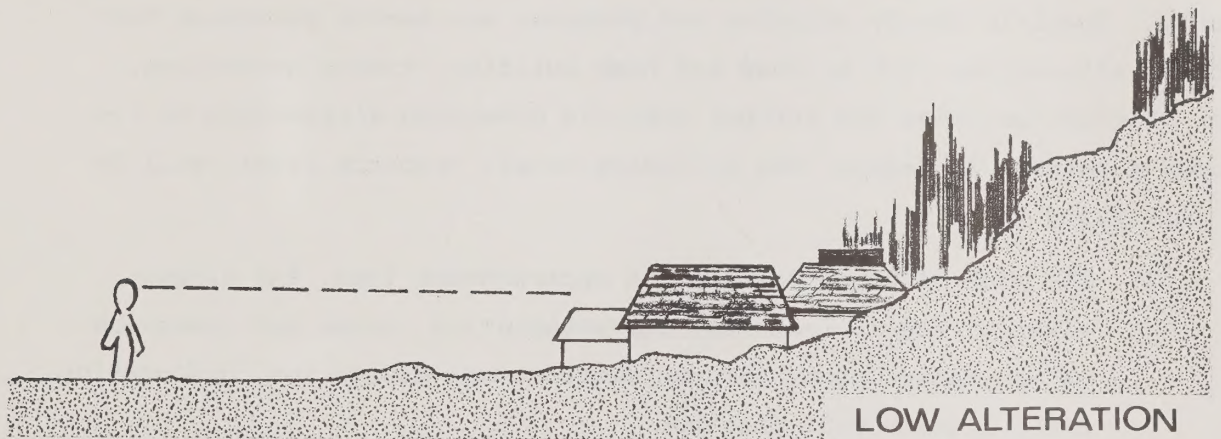
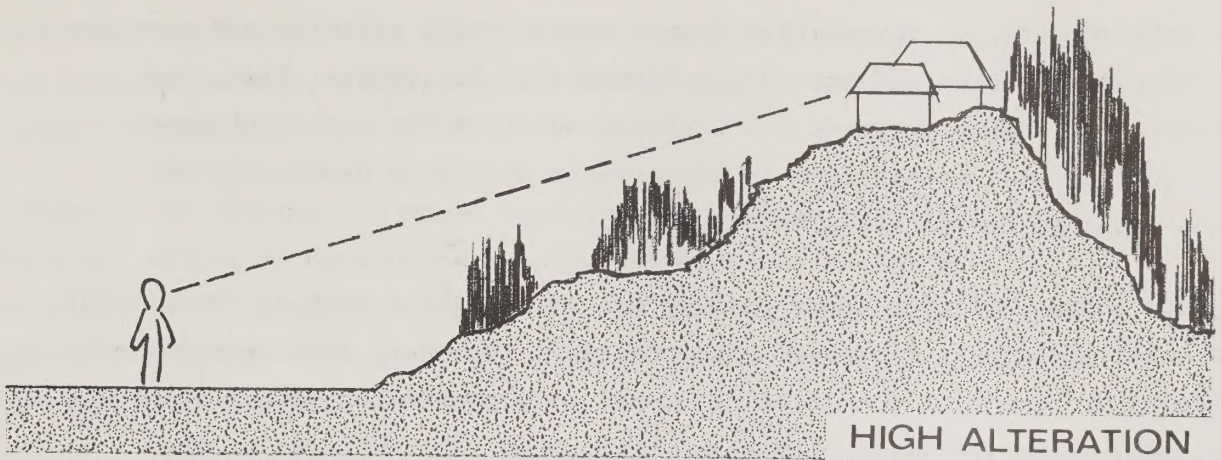
The least obtrusive visual impact of man-made alterations would occur at low locations in the landscape (i.e., the areas of least vulnerability) when viewed from low eye levels (see page 10-7). In these locations, changes in the environment are relatively inconspicuous because of the foreshortening of view of the impacted area (see page 10-7). Those alterations that become apparent can be visually screened from roadways, trails, bikeway routes and mass transit corridors.

Alterations located low in the environment but observed from a high eye-level position, a view from a ridge top road to a valley floor, for example, are very apparent. Neither screening techniques nor adherence to the natural spacing of vegetation in grass or brushland valley areas can totally disguise the development. In these instances, careful design of the alteration or restriction of any alteration in the valley floor might be necessary.

B. Existing Controls and Issues

The County of San Mateo has developed and is currently exercising architectural and site review controls along Skyline Boulevard to help preserve the natural scenic resources along the corridor. The controls used along the Skyline Scenic Corridor should be enhanced and expanded. Additional measures which could be taken to further protect the County's State scenic corridors, and which are encouraged under the California Streets and Highways Code (Sections 154, 227-229.1, 260 and 261), include creative approaches to land use control, setback and height restrictions, screening, sign control, utility line location recommendations, grading and erosion control, water edge controls, timber management, architectural design and character reviews, property maintenance, and scenic viewshed and easement controls.

ALTERATION POSITION IMPACT



San Mateo County, in formulating scenic conservation policies and programs for the Conservation and Open Space Elements of the General Plan, has attempted to meet and exceed State recommendations for scenic highways. This subject will be examined in far greater detail in developing the State-mandated Scenic Highways Element.

Skyline Scenic Corridor controls have helped to retain much of the natural character and scenic vistas of that corridor. However, scenic management policies and programs should be developed to conserve the scenic landscape features, characteristics, and areas throughout the remainder of the County. Specific County policies and programs are needed governing man-induced alterations such as road and home building, timber harvesting, etc. Without policies and further controls governing alterations to the County's natural landscape, the following scenic resource issues will be of continuing concern:

- (1) The risk of urban development encroachment into, and alterations of scenic features, characteristics, areas and viewsheds of San Mateo County through destruction, disruption, obscuration and pollution will continue.
- (2) Development of public facilities such as roads, harbors, sewage treatment plants and pump stations, utility lines and dams, reservoirs and other flood management practices may cause a deterioration of the scenic qualities of San Mateo County.
- (3) Private land uses such as agriculture, timber harvesting, mining, and fuel exploration may adversely affect the County's natural scenic resources.
- (4) Destructive overuse, exceeding the carrying capacity, of San Mateo County's scenic resources could occur through over-intensive recreation and commercial activity.

Scenic policies and management programs which require that man-induced alterations be in conformance with natural scenic landscape characteristics need not be in direct conflict with development, road plan or timber management programs. Further, such policies need not conflict with conservation efforts involving wildlife, soils, minerals, vegetation, air, climate, water

or cultural resources. The use of these resources, however, must be carefully managed so that conflicts with scenic quality standards are avoided or readily resolved.

As pressure to develop San Mateo County's rural areas increases, the cumulative effect of developments and/or alterations to the natural environment will become more apparent. If protective policies are not adopted, the County will gradually lose the scenic quality which makes it unique among Bay Area counties.

APPENDIX -- SCENIC RESOURCESPROPOSED PROCEDURES FOR DESIGNATION OF
SCENIC AREAS, SCENIC FEATURES AND VIEWSHEDSA. Scenic Areas

The suggested procedure for the determination of scenic areas, outlined below, is similar to a natural feature location and inventory technique developed by the United States Forest Service.¹

- (1) The visual limits or viewshed of the proposed Scenic Area is recorded on a United States Geologic Survey topographic map. (See page 10-11)
- (2) The results of an on-site inspection of the proposed Scenic Area's landscape characteristics and features are mapped by use of techniques illustrated on pages 10-11 and 10-13, and a photographic record of the site is made.
- (3) Landscape features of the proposed site are then checked against a Scenic Area Criteria Sheet. (See page 10-14)

If three or more checks have been registered on the Scenic Area Criteria Sheet, the area is considered to be a "Scenic Area". All publicly-owned lands as well as private lands with imputed scenic value should be subject to the Scenic Area determination process.

B. Landscape Features

Designated Primary Landscape Features are those forms within the County which have unusual scientific, historical or scenic value. Designated primary landscape features include, but are not limited to, the types starred on the Landscape Feature Criteria Sheets for Scenic Areas.

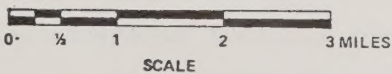
(See page 10-14)

¹ Forest Landscape Description and Inventories, Pacific Southwest Forest and Range Experiment Station, 1968.

TOPOGRAPHIC RECORDING OF VIEWSHEDS AND SCENIC AREAS



NORTH



LEGEND:

-  MILEAGE MARKS
-  FOREGROUND BOUNDARY
(1/4 MI. FROM ROAD)
-  MIDDLEGROUND BOUNDARY
(3 MI. FROM ROAD)
-  BOUNDARY OF VIEWSHED

AREAS:

FOREGROUND (WITHIN 1/4 MILE OF ROAD)
5150 AC.

MIDDLEGROUND (BETWEEN 1/4 & 3 MILES FROM ROAD)
22540 AC.

BACKGROUND (OVER 3 MILES FROM ROAD)
6520 AC.

WATER AREAS 3320 AC.

TOTAL AREA, 37,530 ACRES

BASE MAP SOURCE: USGS, 7 1/2 MINUTE SERIES

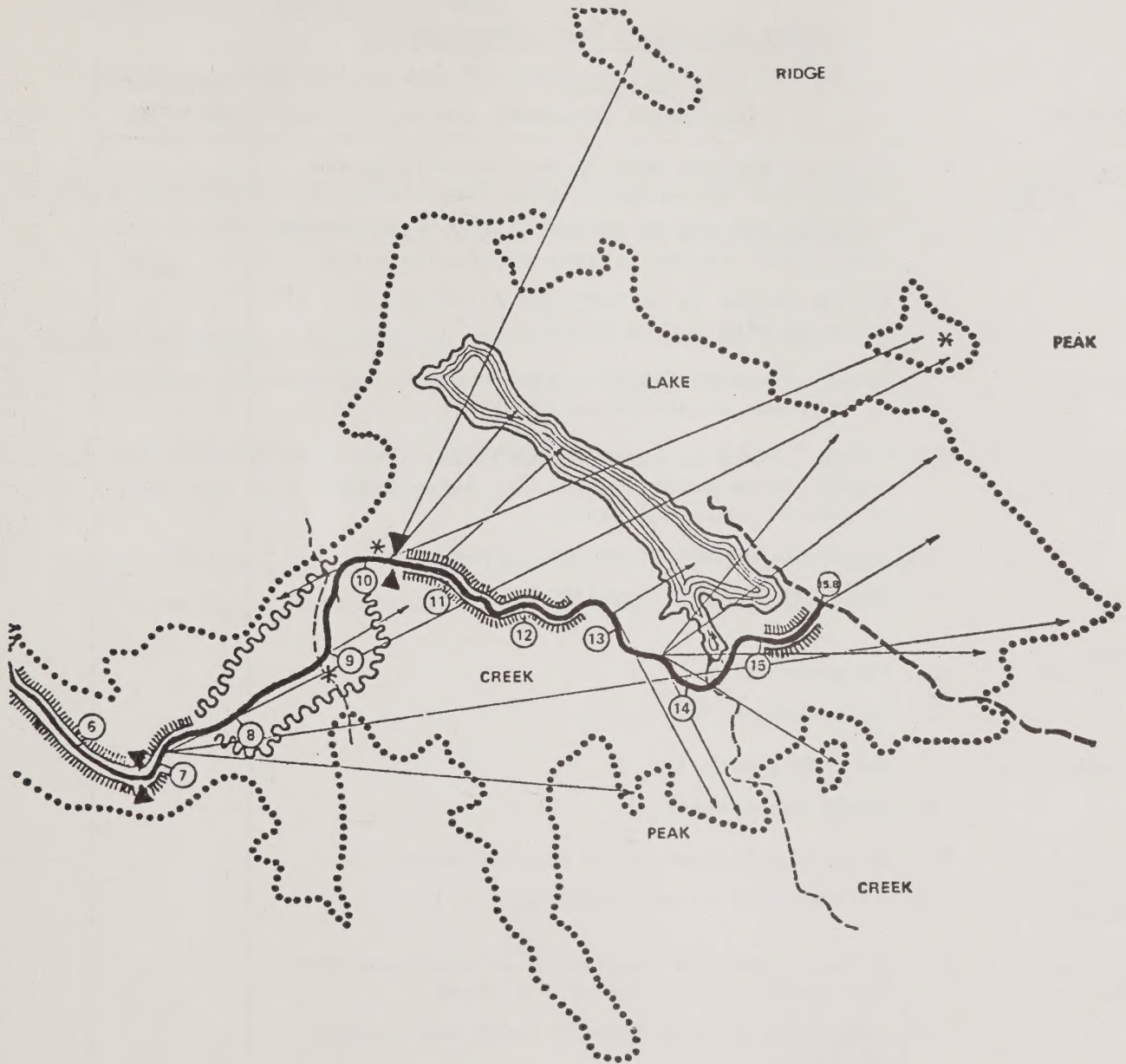
C. Designated Scenic Corridor and Viewshed Designation Procedure

The views seen from transportation or linear recreation corridors (i.e., riding and hiking trails, roads, bikeways and mass transit routes) should be identified and mapped to ensure their preservation.

All existing and planned County transportation and linear recreation "corridors" should have visual boundaries determined for them and their scenic and landscape features inventoried. This corridor definition process will fix the boundaries of existing corridors and help to plan new corridors. After important scenic features of a corridor and its viewshed have been defined, specific scenic area and feature controls will be applied to insure their conservation. The boundary determination processes and inventory techniques to be used by the County are outlined below:

- (1) Topographic Platting - The limited visibility from each path, roadway, trail, public land area, etc., is platted on a United States Geological Survey topographic map. All land areas, including distinct hilltops and hillocks, visible from the existing or proposed corridors or public lands, will be considered to be part of the topographical scenic definition of the corridor or public land area.
- (2) Scenic and Landscape Inventory - The scenic and landscape features of each corridor are determined through on-site investigations. Landscape notation and photographic techniques similar to those developed by the United States Forest Service should be used in addition to the County's Specific Scenic Feature and Area Criteria. After the scenic and landscape features and areas within the corridor boundaries and public land viewshed have been determined, specific scenic corridor management measures should be prescribed and applied. General scenic corridor management measures should be applied while the topographic and landscape inventory processes are underway.

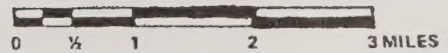
LANDSCAPE MAPPING OF VIEWSHEDS AND SCENIC AREAS



LEGEND:

- ① MILEAGE MARKS
- ▼ ROAD SUMMIT
- ▲ ROAD SUMMIT
- LINE OF SIGHT
- * FEATURE (DOMINATED) LANDSCAPE
- ENCLOSED LANDSCAPE (SPACE)
- FOCAL LANDSCAPE; CONIFER CORRIDOR
- BOUNDARY OF VIEWSHED

NORTH



SCALE

CRITERIA FOR SCENIC AREA DETERMINATION

CATEGORY	CRITERIA (Landscape Features)	PRESENCE ON SITE
<u>Topographic forms</u>	*1) Vertical Exposed Rock Faces - Usually sparse vegetation, slopes from 60 to 70%. 2) Steep noticeable 50 to 60% slopes, significant land forms, typical, large vegetation areas. 3) Strong slopes 30 to 50%+ and alluvial areas in contrast with strong slopes.	
<u>Scientific forms</u>	*1) Areas of scientific/geologic interest (may not be apparent to untrained observer).	
<u>Vegetative forms</u>	*1) Unique plants or plant communities, (for example, large plants, unusually large groups of plants, heritage trees). 2) Large grasslands/brush open spaces. 3) Uncommon genus or species for area.	
<u>Water</u>		
Streams	*1) Permanent flow. 2) Intermittent flow.	
Waterfalls	*1) Waterfall over 3'. 2) White water areas.	
Spring/ Percolation Areas	*1) Significant, year round flow of water. 2) Intermittent flow of water.	
Lakes/ Reservoirs	*1) Natural lakes or reservoirs in existence for 75+ years, reservoirs over 5 acres. 2) Reservoir of less than 75 years and minimum of 5 acres. 3) Lakes and reservoirs less than 5 acres.	
Ocean/ Beach	*1) All ocean beach areas within $\frac{1}{4}$ mile of the mean high-water line or State Highway #1, whichever is less. *2) Unique upland areas providing primary view-sheds from public beaches.	
<u>Structures</u>	*1) State and/or County designated historic sites. 2) Singular or multiple structures of architectural interest. 3) Engineering constructs. 4) Other archaeological, historic, or cultural sites.	

*These features, if present, are to be designated "Primary Landscape Features".

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1968

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United States Department of Agriculture, 1971

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Range Experiment Station, United States Department of Agriculture,
1973



Chapter **11**

OPEN SPACE ADDENDUM

ADDENDUM TO SAN MATEO COUNTY'S ADOPTED PARKS AND OPEN SPACE ELEMENT

In March, 1969 San Mateo County adopted the Parks and Open Space Element of the County General Plan, entitled Parks and Open Space, A Program for San Mateo County. In the years since 1969 the County has continued to study and analyze its open space resources and has developed implementation measures to effectuate the plan.

A Charter Amendment, which gained approval of the electorate in 1972, called for the expenditure of ten cents per \$100 of assessed value on park and open space acquisitions and development for a period of ten years. In connection with the charter election, a number of parks and open space acquisition priorities were drawn from the Parks and Open Space Plan and designated the Ten Year Park Acquisition and Development Program.

This chapter amends the 1969 adopted Parks and Open Space Element to bring it into conformance with recent State legislative requirements and plan element guidelines. Revisions to the Plan contained in this report and the new Parks and Open Space Land Use Designations Map, attached to the end of this report, supplant conflicting policies and plan recommendations contained in the 1969 Parks and Open Space Plan in the unincorporated areas of the County.

The chapter contains:

- I Specific changes to the adopted Parks and Open Space Plan.
- II Definition of Open Space Categories.
- III Analysis of Significant Vacant Lands.

I. SPECIFIC CHANGES TO THE ADOPTED PARKS AND OPEN SPACE ELEMENT

A. Park Acquisition Program Revisions

- (1) Acquisition of the "Sand Caves" near Skyline is added to the Ten-Year Program list of park acquisitions.
- (2) The Tobin Clark Estate, presently being privately developed for residential use, is deleted from the list of park acquisition priorities.
- (3) Lands within the proposed South Bay National Wildlife Refuge which

were shown for County acquisition in the 1969 Parks and Open Space Plan are shown as Federal responsibility in the new Parks and Open Space Land Use Designations Map.

B. Changes to Areas Designated Open Space

The new Parks and Open Space Land Use Designations Map included at the end of this report reflects substantial changes from the 1969 Parks and Open Space Plan map in the delineation of areas designated "general open space". The general open space designation in the amended Plan Map includes all lands defined by the following criteria:

- (1) On the Coastside, all lands are designated "open space" which are not presently in urban uses or zoned for development or subdivided, or which are not designated as Rural Service Centers. The exceptions to this are that subdivided lands within the rift zone of an active fault are designated as "open space", and subdivisions on the South Coastside which are not designated as or adjacent to Rural Service Centers are shown as "open space". This treatment of South Coastside subdivisions is unchanged from the 1969 Parks and Open Space Plan. The open space areas thus defined include lands for the preservation or managed production of natural resources, lands for recreation, and lands posing severe hazards to public health and safety.
- (2) On the Bayside, unincorporated lands which pose severe hazards to public health or safety, are inaccessible, or are deemed unsuitable for development, are designated as "open space". The five Bayside areas which fall under this designation are portions of San Bruno Mountain, portions of Sugarloaf Mountain, private lands which are functionally part of the San Francisco Watershed, unsubdivided lands south of Portola Valley, and private, non institutional lands west of Woodside extending to Skyline Boulevard.

C. Designation of Land as "Phase II Urban Reserve/Open Space"

On the Mid-Coastside, lands which are physically capable of urban development, which may be easily provided urban services, and which are adjacent to existing

or proposed future development are designed as Phase II urban reserve/open space. These are lands which could ultimately develop at urban densities following substantial infilling within areas presently slated for development. Any development at urban densities within Phase II areas would require a rezoning of the land to urban uses. Barring such a rezoning, the permitted uses on the land would be identical to those allowed in other open space areas.

D. Designation of Areas as "Vacant Lands Under Study"

Vacant lands on the Bayside which are virtually certain to develop consistent with adjoining areas are designated "urban". However, large tracts of land in a single ownership which are relatively independent of surrounding urban development, and for which planning has not yet been completed, are classified "Vacant Lands Under Study" in the Amended Parks and Open Space Plan Map.

Lands under this designation must be planned as a unit so that any development thereon respects the natural features and open character of the site and conforms to an overall site plan. It is anticipated that some areas with this designation will ultimately be left in permanent open space.

E. Designation of Lands as "Institutional"

Those unincorporated lands on the Coastside which are owned by quasi-public organizations such as the Y.M.C.A., the Boy Scouts, etc., are designated "institutional". Also included in this category are lands which are now limited by deed restrictions to relatively narrowly-defined uses.

Unincorporated lands on the Bayside which are designated "institutional" include golf courses, the San Francisco County Jail, and portions of the lands of Stanford University. Generally, institutional land is expected to remain in its existing use.

F. Designation of Rural Service Centers

Three South Coastside communities are designated as Rural Service Centers in the plan: Pescadero, San Gregorio, and La Honda. It is anticipated that these communities will provide expanded services, as needed, for Coastside agricultural operations, tourist trade, and local Coastside

residents. Additional housing for persons employed on the South Coast-side will be permitted in these centers.

II. DEFINITION OF OPEN SPACE CATEGORIES

According to State law, open space is defined under four generic headings:

- A. Open Space for the Preservation of Natural Resources,
- B. Open Space for the Managed Production of Resources,
- C. Open Space for Outdoor Recreation,
- D. Open Space for Public Health and Safety.

This section describes each of these categories of open space and relates them to appropriate chapters of this report, the existing Parks and Open Space Plan, or other related planning reports and policy statements. Generally, Open Space for the Preservation or Managed Production of Resources is included under Conservation Element policies as part of the management program for a particular resource while Open Space for Outdoor Recreation is covered in the 1969 Parks and Open Space Plan. Not specifically covered in earlier chapters of this report of the existing Parks and Open Space Plan is Open Space for Public Health and Safety. This category of open space is extensively covered for the Coastside under the Density Matrix, and is covered for the first time on the Bayside in this chapter of the Conservation-Open Space Element.

A. Open Space for the Preservation of Natural Resources

This category of open space is covered in the following chapters of this report and in the Findings, Goals, and Policies section, Chapter 2.

- (1) Open space for preservation of wildlife - Chapter 6.
- (2) Open space for preservation of plant life - Chapter 5.
- (3) Open space for ecological and scientific study purposes - Chapter 5.
- (4) Open space for preservation of natural water forms and watershed lands - Chapter 4.
- (5) Open space for preservation of soils - Chapter 7.
- (6) Open space for preservation of cultural and scenic resources - Chapters 9 and 10.

B. Open Space for the Managed Production of Resources

This category of open space is covered in the following chapters of this report and in the Findings, Goals, and Policies section, Chapter 2.

- (1) Open space for managed production of forests - Chapter 5.
- (2) Open space for managed production of rangelands - Chapter 7.
- (3) Open space for managed production of food and fiber - Chapter 7.
- (4) Open space for recharge of ground water basins - Chapter 4.
- (5) Open space for management of commercial fisheries - Chapter 6.
- (6) Open space for managed production of major mineral deposits - Chapter 8.

C. Open Space for Outdoor Recreation

This category of open space includes areas of scenic, historic, and cultural value, parks, beaches, lake and reservoir shores, rivers and streams, and trail and highway corridors linking areas of scenic, historic, cultural or recreational significance.

Program plans and policies for San Mateo County's cultural, historical and scenic resources are detailed in Chapters 9 and 10 of the Conservation and Open Space Element, as well as in the 1969 Parks and Open Space Element.

San Mateo County has one officially designated State Scenic Highway, the Skyline Scenic Route. Several other proposed State scenic corridors within the County are currently under study. Existing and proposed locations of County trails and other pathways and policies for their development are fully outlined in the 1969 Parks and Open Space Plan.

In addition to plans for officially designated and proposed State scenic corridors and trails, findings, goals, and policies for the retention of scenic open space observed from all through and major road corridors have been outlined in Chapter 10.

San Mateo County's adopted Parks and Open Space Plan extensively details planning policies for the County's recreational open space areas, including parks, waterways, beaches, trails, scenic highways and historic sites. Since this plan was adopted, however, some consideration has been given to

developing: 1) criteria for assigning priorities to items in the plan; 2) a process for making changes in the plan and 3) criteria for location and development of public and private recreational areas. As stated in the Action Program, these subjects will be studied in greater depth beginning in calendar year 1974.

D. Open Space for Public Health and Safety

Open Space for Public Health and Safety includes unincorporated County areas which fall into the following categories:

- (1) flood plains
- (2) steeply sloping areas
- (3) earthquake fault zones
- (4) areas of unstable slope
- (5) watersheds
- (6) areas for preservation of air quality

Each of these categories is described below. An additional category, "open space for protection against fire hazards", is presently being studied and will be added to the Open Space for Public Health and Safety section when the results of the study are available. The new Parks and Open Space Land Use Designations Map at the end of this report generally reflects Open Space for Public Health and Safety designations.

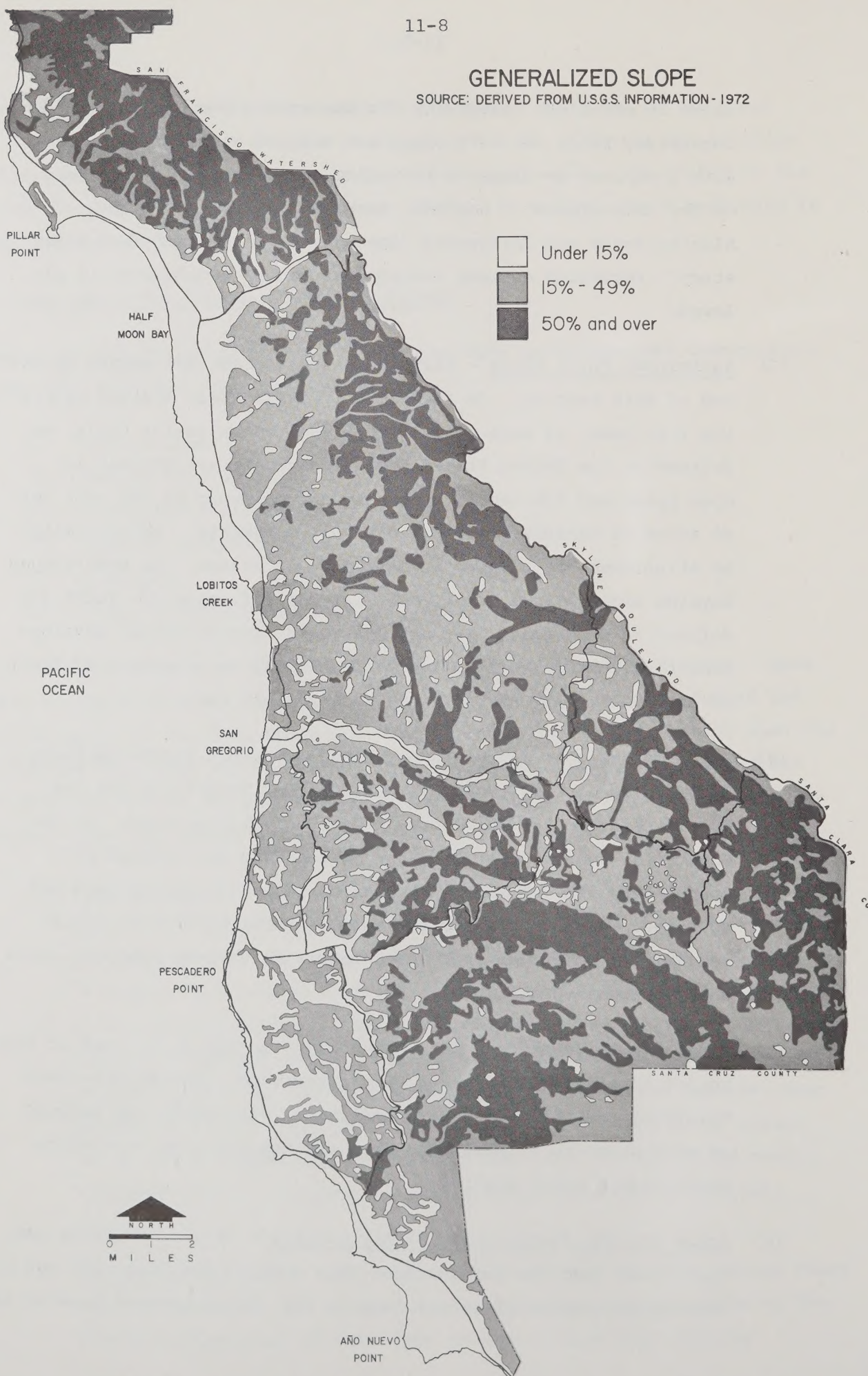
- (1) Flood Plains - A map showing historic areas of flooding is contained within the water resources section of this report (Chapter 4). In addition to this map, more detailed information is available on selected flood plains from the Army Corps of Engineers and the United States Geologic Survey. On the Coastside of the County, flood plains have been defined as open space areas where no structural uses are allowed within the designated flood channels. On the Bayside, considerable urbanization has already occurred in flood plain areas; hence, some combination of controls over land use and flood control measures will be required to avoid extensive damage by periodic flooding.
- (2) Steeply Sloped Areas - The slope map at the end of this section shows generalized slope for the County's Coastside area, available to the Planning Department are far more accurate slope maps showing

lands in six slope categories for the entire County. On the Coastside, lands over 30% slope are defined as "open space", with a maximum development intensity of one unit per 20 acres. On the unincorporated Bayside, large undeveloped steeply-sloping areas are designated "open space" or "vacant land under study", requiring extreme caution before any development is allowed.

- (3) Earthquake Fault Zones - Earthquake fault zones are mapped at the end of this section. On the Coastside, all areas located within the rift zone, or zone of fractured rock of an active fault, as defined by the United States Geologic Survey, are defined as open space and limited to a density accumulation of one unit per 40 acres to minimize the risk of fault movements. Additionally, no structures are allowed on active fault traces. In undeveloped Bayside areas, lands within the rift zone of an active fault are defined as open space, requiring extreme caution before development is allowed. No structures are allowed on or within 50 feet of an active trace according to recent State laws.
- (4) Areas of Unstable Slope - A map based on United States Geologic Survey data showing areas of severe slope instability for the Coastside area is contained at the end of this section. On the Coastside, areas of severe slope instability are defined as open space with a maximum development intensity of one unit per 40 acres. On the Bayside, undeveloped lands within the severe category are shown as open space requiring extreme caution before any development is allowed.
- (5) Designated Watersheds - The Open Space Plan Map at the end of this report identifies two functioning watersheds, the San Francisco Watershed and the California Watershed. Watersheds are defined as open space to be protected from any inharmonious uses which might affect water quality.
- (6) Areas for the Preservation of Air Quality - On the new Parks and Open Space Land Use Designations Map, most of the Coastside and a significant amount of vacant land on the unincorporated Bayside is

GENERALIZED SLOPE

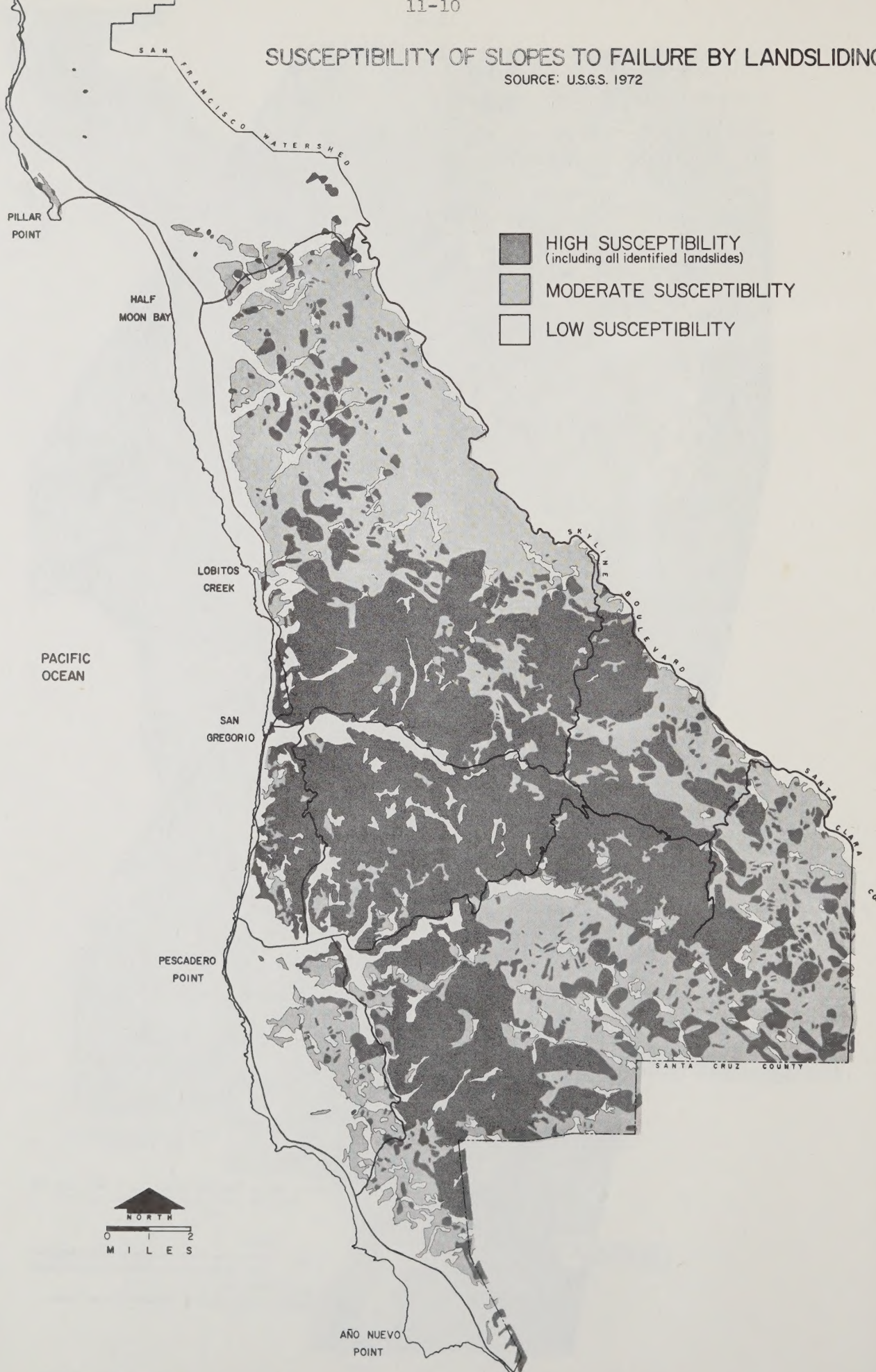
SOURCE: DERIVED FROM U.S.G.S. INFORMATION - 1972





SUSCEPTIBILITY OF SLOPES TO FAILURE BY LANDSLIDING

SOURCE: U.S.G.S. 1972



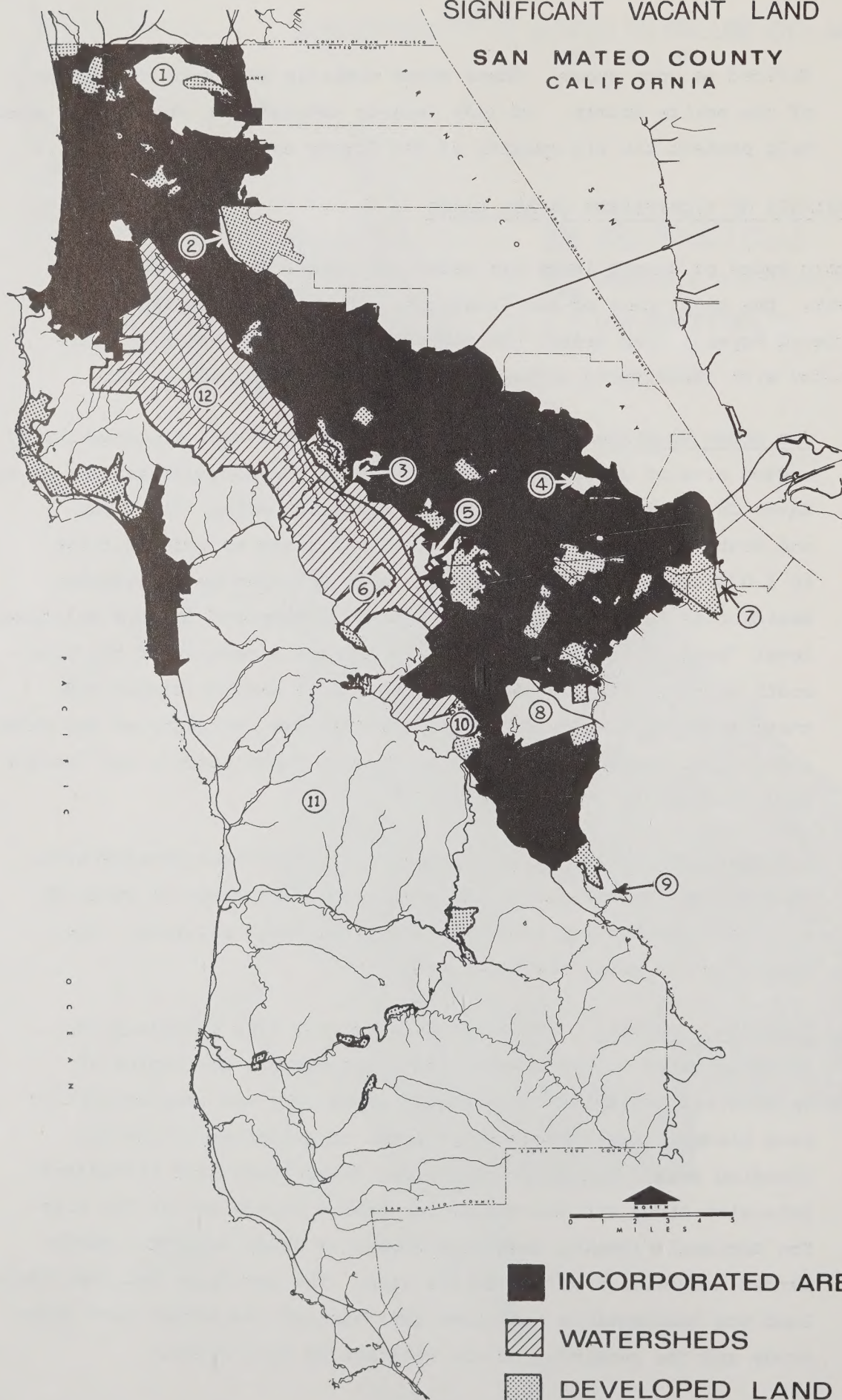
defined as open space. These areas comprise well over two-thirds of the entire County. If left largely undeveloped, these areas should help protect the air quality of the County and region.

III. ANALYSIS OF SIGNIFICANT VACANT LANDS

Three basic types of vacant lands are under the jurisdiction of County Government: the major part of the Coastside, the San Francisco Watershed, and scattered Bayside open areas. Significant vacant land areas are discussed below with identifying numbers keyed to the map on page 11-12.

- (1) San Bruno Mountain - San Bruno Mountain is a large, topographically rugged area of 3,600 acres, which lies in the northern section of San Mateo County between the cities of Brisbane, Colma, Daly City and South San Francisco. The County has plans to acquire title to 1,074 acres on the Mountain for park and open space purposes. Residential and commercial development is proposed for the relatively level "saddle" area of the Mountain and for a portion of the lower south slopes. The remainder of the land is steeply sloped and unsuitable for development. The new Land Use Designations Map shows portions of San Bruno Mountain as "park", "open space", and "vacant land under study".
- (2) San Francisco International Airport - San Francisco International Airport owns approximately 180 acres of vacant land, of which 50 acres are currently planned for airport-related services. The remaining 130 acres are under study.
- (3) Sugarloaf Mountain - Sugarloaf is a natural area of nearly 300 acres situated on the Bayside foothills between the cities of Belmont and San Mateo. Its rugged topography and inaccessibility have hindered development despite the urbanization of the surrounding area. Recent proposals for development have stimulated intensive study and discussion concerning future use of the site. The Regional Planning Committee Sugarloaf Study Committee recommended acquisition of the entire site. The new Parks and Open Space Land Use Designations map shows the "hogback" as vacant land under study and the remainder of the Mountain as open space.

SIGNIFICANT VACANT LAND

SAN MATEO COUNTY
CALIFORNIA

- (4) Ideal Cement Lands - The Ideal Cement Company owns approximately 127 acres in the southeastern portion of the County adjoining the Bay in the Redwood City area. Cement manufacturing on the site has been terminated recently. Alternative industrial use of the site is proposed by the owner. This site is designated "vacant land under study" in the new Parks and Open Space Land Use Designations Map.

In addition, Ideal owns tidal and subsurface lands in the Bay, including a portion of Greco Island, which has been proposed for inclusion in the South Bay National Wildlife Refuge. These lands are under the jurisdiction of the cities of Redwood City and Menlo Park.

- (5) Hassler Home - The Hassler Home site of 294 acres, the former site of a San Francisco home for the elderly, was proposed for public acquisition for parks and open space by the City of San Carlos. Acquisition financing through a city bond election in November of 1973 failed, but there is still active interest in acquisition; hence the site is designated "vacant land under study" in the new Parks and Open Space Land Use Designations Map.
- (6) Roth Estate - This 716-acre property represents an in-holding within the San Francisco Watershed. It is shown as open space in the new Parks and Open Space Land Use Designations Map, consistent with protecting the watershed function.
- (7) Faber Tract - The Faber tract, containing approximately 233 acres, is owned by the City of Palo Alto. The land is proposed to be used as an ecological reserve.
- (8) Stanford Lands - Vacant lands owned by Stanford University consist of approximately 2,470 acres located in the southeast section of the County. These lands have been proposed for industry, housing, or academic reserve by the University. Jasper Ridge and the linear accelerator site are designated "institutional" and should remain in open space, while the remainder of the property is designated "vacant land under study".

- (9) Unincorporated Portola Valley Area - The undeveloped lands south of Portola Valley and east of Skyline Boulevard to the Santa Clara County line are predominantly hazardous for developed uses, as they are steep, severely unstable, and intersected by the San Andreas Fault. They are also highly inaccessible. These lands are shown as "open space" in the new Parks and Open Space Land Use Designations Map.
- (10) Unincorporated Woodside Area - The area west of the present City limits of Woodside, north of Route 84 and east of Skyline Boulevard lies entirely within the Woodside sphere of influence. The land is relatively steep, susceptible to landsliding, and adjoins the San Andreas Fault. This approximately 1300-acre area has access by means of Bear Gulch Road, a limited two lane dirt road. The area is shown as open space in the new Parks and Open Space Land Use Designations Map due to its hazards for development, limited access, and proximity to the California Watershed, whose drainage area must be protected.
- (11) The Coastside - The San Mateo County Coastside is a large area of over 240 square miles encompassing the western two thirds of the County. Development of the Coastside has not occurred due to inaccessibility; rugged, unstable terrain; sewage treatment limitation; water supply problems, and the availability of large tracts of easily-developable and accessible land on the County's Bayside. The Coastside will continue to be largely undeveloped due to the recent adoption of the Density Matrix, which discourages development on hazardous, unstable and remote areas, while allowing low-density clustered development in suitable locations.

The adoption of the proposed conservation and managed production of resources policies, detailed in Chapter 2 and in chapters 4 through 10, will further insure the retention of natural open space on the Coastside. Outdoor recreational use of Coastside open space areas which preserve natural resources, provide for the managed production of resources, and preserve lands for public health and safety reasons, must be carefully regulated.

- (12) The San Francisco Watershed - The San Francisco Watershed consists of about 23,000 acres of lands which provides water to San Francisco and most of San Mateo County. A scenic easement has been granted over the entire area, guaranteeing that the land will never be used for urban uses. Only facilities related to the maintenance or improvement of the Watershed are allowed. Recreational use of Watershed lands has been proposed and is currently under study.



Chapter **12**
ACTION PROGRAM

ACTION PROGRAM FOR THE IMPLEMENTATION OF THE CONSERVATION
AND OPEN SPACE ELEMENT

Many conservation and development control programs have been enacted and will continue in effect for a number of years. Other actions are being taken to expand these programs or to establish new ones to more effectively achieve conservation and open space objectives and to carry out natural resource management programs. The state of existing governmental programs in resource management and additional action programs proposed or being developed are described in the following sections of this report.

A. The Basic Approach to Conservation and Development Controls

Two basic categories of actions can be utilized to preserve open space and conserve natural resources: public acquisition, and public regulation. The most direct method for the implementation of open space objectives is for governments to become owners of land. Full fee title to land can be acquired through direct purchase or through gifts, bequests, or dedication. Public acquisition is most suitable when certain specific, unique features are to be protected or where significant public access is desired, beaches or park lands, for example. In other cases, where only part of the natural feature or resource needs to be preserved or protected, full title acquisition may not be required. Government can acquire less than full fee title, can purchase development rights, or can purchase or require the dedication of easements.

Land development regulations are most appropriate in those situations where private development or utilization of a resource, including land, can occur without significant damage to the resource or the public interest to be protected. These regulations are generally based on the police power of government and involve such devices as zoning, subdivision regulation, and other development regulating ordinances. A successful resource conservation and land management program must utilize a whole range of techniques in a well-thought-out and orderly fashion.

San Mateo County is naturally divided into two discrete areas: the largely urban, incorporated Bayside and the predominantly rural, unincorporated Coastside. These two areas must be treated somewhat differently in considering action programs for the implementation of the plan. Land development regulations are most effectively and appropriately applied on the Coastside of the County, where the existing levels of development are low and development pressures are less intense than on the Bayside. In this area direct public acquisition can be limited to certain specialized situations and strong reliance can be placed on land development regulations. On the Bayside, however, where much of the land is already committed to urban development and pressures are strong to put land into urban use, more emphasis has to be placed on direct public acquisition, especially where safety or land suitability considerations do not inhibit or prevent development.

The basic notion behind many of the County's planning and conservation concepts on the Coastside is that urban levels of development can and should be confined to existing communities and subdivided areas including the unincorporated areas of Montara, Moss Beach and El Granada, and the City of Half Moon Bay. The remainder of the area, with the exception of Pescadero, San Gregorio and La Honda, which are Rural Service Centers, should be considered as a non-urban Resource Management Area. The use of zoning to restrict development to low-intensity, rural uses reinforces the existing limited market situation, and prevents the creation of new urban nodes. The physical characteristics of much of the land on the Coastside also dictates a low-intensity use of the land. Much of the Coastside is mountainous, with the bulk of the land west of Skyline Boulevard in slopes over 30%. Much of the land is also geologically unstable, with major hazards from landsliding. There are other less extensive areas of land within flood plains, within active earthquake fault fracture zones, or subject to coastal erosion.

Bayside Lands - Unincorporated lands on the Bayside are generally small and discontinuous parcels. Many of these lands are surrounded by cities and already committed to urban development. There are only a few remaining unincorporated areas of importance as open land. Because of development pressures, direct public acquisition generally is required to retain these lands in open use, although some reliance can still be placed on land development regulations. The one large remaining piece

of undeveloped unincorporated land in the northern part of the County is San Bruno Mountain. The acquisition of a major park and open space reserve on the mountain has been designated as a high priority in the Parks and Open Space Plan and in the County's ten-year acquisition program.

Another large area of undeveloped land, the San Francisco Watershed, borders the central portion of urban development on the Bayside. Use of this area of 23,000 acres is controlled by a relatively recent four-party agreement between the U.S. Department of Interior, State of California, San Mateo County and the City and County of San Francisco and is limited to watershed and compatible recreational activities. Except for the four Bayside areas discussed in Chapter 11, much of the remaining vacant land on the Bayside of the County is located within cities, or is in public ownership or has development restrictions, or is recommended for acquisition. Detailed recommendations are contained within the County's adopted Parks and Open Space Plan, in Chapter 11 and the new Parks and Open Space Land Use Designations Map.

B. Specific Action Programs

- (1) The Parks and Open Space Plan - In the spring of 1969 the Planning Commission and Board of Supervisors adopted the Parks and Open Space Element of the County General Plan. This plan element defines major open space areas and outlines methods for preservation of parks. Many of these open space areas are directly related to natural resource protection, since they cover major watershed areas, marshlands and wildlife preserves, scenic and visual resources, beaches and major forest areas. The Parks and Open Space Element set forth a long-range park acquisition program, a proposed system of riding and hiking trails, a scenic highway development program, and an historic site acquisition and marking program.

In early 1971 a recommended financing program for long range park acquisition was presented to the Board of Supervisors, and in November of 1972, a proposition was placed on the ballot to amend the County Charter to require that 10¢ per \$100 of assessed valuation be earmarked annually for ten years for park and open space acquisition and development purposes. The

proposition was approved and the first phase of the long-range acquisition program is now being carried out. Projects designated for acquisition during the first ten years are shown on the New Parks and Open Space Land Use Designations Map. Funds are also earmarked for the development of undeveloped park lands presently owned by the County. The ten year park acquisition and development program is a major element of the open space action program.

- (2) Other Park Acquisition Techniques - The Ways and Means Committee report, Parks and Open Space--Financing the Plan , published in January, 1971, contains a thorough analysis of financing methods available to implement a major park and open space acquisition program. The following methods were evaluated:

- a. Pay-as-you-go or cash financing.
- b. General obligation bonds.
- c. Non-profit corporation financing.
- d. Revenue bonds.
- e. Regional park district creation.
- f. Use of park and recreation districts.
- g. Leasing and development of land.
- h. Establishment of County Service Area.

In addition, a number of innovative financing methods were investigated that would require new or changed State legislation. Generally it was concluded that pay-as-you-go or general obligation bond financing were the two methods most appropriate for long-range financing of a major park and open space acquisition program. Other methods have only limited applicability or require major structural or institutional changes.

- (3) Other Acquisition Procedures - The Parks and Open Space Plan discusses methods of acquisition of land other than by purchase in full fee or less-than-fee. Techniques include life estate, purchase-lease back, purchase-sale back, use of scenic easements, trail easements, and acquisition of development rights. However, primary emphasis in the plan was placed on full fee acquisition. The County has made only limited use of acquisition of full or partial interest in lands by other than full

fee acquisition. As some preliminary work has been done to evaluate the usefulness of other techniques, including a discussion contained in a major review and analysis of the existing park acquisition programs presented to the Board of Supervisors by the Parks and Recreation Department. However, additional work should be undertaken to define specific programs in this area. This arrangement should probably be undertaken as part of the work of the County Land Acquisition Committee, which includes representatives of the County Manager's office, the Planning Department, the Parks and Recreation Department, and the Director of Property. Particular emphasis should be given to analyzing ownership and maintenance devices for unused lands resulting from clustering of low-density uses in the Resource Management Area. Although it is unlikely that there would be significant public use of these lands, a strategy must be worked out for ownership responsibility, control and maintenance.

- (4) Agricultural Preserves and the Conservation of Agricultural Land- San Mateo County has been participating actively in the Agricultural Preserves Program under the California Land Conservation Act (Williamson Act) passed by the State legislature in 1965. There are presently over 45,000 acres of land under agricultural preserve contracts within the County. Although Williamson Act contracts can be cancelled prior to expiration of the ten-year agreement, the basic policy of the County Board is against allowing withdrawal of lands prior to the completion of the term set forth in the contract. The original State Act has been broadened to allow lands in uses considered compatible with agriculture to be included under Williamson Act contracts.

Additional actions are being taken by County Government to encourage retention of land in agricultural use. Work is scheduled by the Planning staff to complete a detailed analysis of agricultural activities in the County and conditions that would make agriculture more economically viable. This will include an analysis of general problems of and impediments to agriculture and an investigation of methods for supplying more agricultural water. A study of farm labor housing is presently under way,

since this is one of the factors that make it difficult to get an adequate supply of temporary farm labor. As these studies are completed, additional actions will be recommended to help stabilize or encourage agriculture as a permanent use over much of the Coastside.

- (5) The Density Matrix - The Density Matrix is designed to define residential density policies for the largely-rural areas of the County. It expands on the general discussion and definition of compatible uses within open space areas contained in the General Plan and the Parks and Open Space Element. After review and public hearings, the Matrix was approved by the Planning Commission on July 11, 1973. The Board of Supervisors adopted the Density Matrix as policy for defining extremely low intensity residential densities compatible with open space on September 25, 1973. The Matrix supplants the present "S" zoning district--a combining district used to define residential density within the agricultural and forestry and conservation districts. Density definitions prescribed by the Matrix will be incorporated in the new Open Space Zoning Ordinance procedures which, when adopted, will supersede the existing zoning ordinance controls.

The Density Matrix uses the following land characteristics in determining the maximum number of dwelling units allowed on a parcel of land:

- a. Land located within primary channels of 100 year flood plain.
- b. Inaccessible land--lands over one mile from an existing all-weather through public road.
- c. Land under Agricultural Preserve contracts.
- d. Land within special Agricultural Districts on the County's coastal terrace.
- e. Land with severe slope instability.
- f. Land within fracture zone of an active earthquake fault.
- g. Land within various slope categories--0-15%, 15-30%, 30-50% and greater than 50%.
- h. Land within an adopted State scenic highway corridor.
- i. Land containing good quality agricultural soils within a climatic zone suitable for growing artichokes or Brussels sprouts.

Within these categories, a residential density is assigned, ranging from 1 unit per 5 acres to 1 unit per 40 acres, as shown on the following table. The Matrix determines the total number of dwelling units allowed to accumulate for any parcel of land. The units may be placed anywhere on the site providing access, water and sewage standards can be met and providing that the selected site is not hazardous for development. Structures may not be located over an active fault trace or within 200' of a perennial stream. The building site must also be shown to be stable and not susceptible to landsliding.

- (6) The Existing Zoning Ordinance and Program for Modification - The existing County Zoning Ordinance contains many provisions aimed at resource conservation particularly for agricultural and open space lands. Much of the unincorporated territory within the County is zoned for agricultural or forest uses, primarily in the "Coastside" area, west of Skyline Boulevard and south of Pacifica.

The County has three "A" (agricultural) districts. One of these (the A-2 District) permits only agricultural and related low-intensity uses. A second "A" District applies to intensive agricultural uses such as nurseries and greenhouses (the A-3 floriculture District). The most common agricultural district, the A-1 agricultural district, permits low intensity residential uses as well as agricultural and related uses. Residential density is generally limited to between one unit per acre and one unit per five acres, depending on land slope. In addition to the agricultural districts, there is a forestry and conservation district (F-1), where the predominant use permitted is forestry and tree farming plus related uses such as agriculture, raising of livestock, and commercial recreation uses. Low-intensity residential uses are also permitted in the F-1 District, with a minimum lot size of five acres. The recently approved Density Matrix procedure modifies densities permitted within A-1, A-2 and F-1 districts. Generally, density is limited by the Matrix to one unit per five acres through one unit per forty acres, depending on the physical characteristics of the site.

(Factors Which Must be Satisfied for Each Residential Density Category Within the Resource Conservation Area)

DENSITY CATEGORY (specified residential density may be cumulated for any portion of a piece of property where all checked factors can be satisfied)				Factors to be Satisfied if Checked Under Density Category	Definition and Source of Factor
1 unit per 5 acres	1 unit per 10 acres	1 unit per 20 acres	1 unit per 40 acres		
X	X	X	* X	Land located outside designated floodway of flood plain	A designated floodway is that portion of a flood plain most subject to flood damage as defined by a project report of the Army Corp of Engineers. Where unavailable, the U.S.G.S. 100 year flood plain designations shall be used.
X	X	X		Land located outside Rift Zone of Active fault	A rift zone is the area of fractured rock around a fault trace. Defined by U.S.G.S. Map MF 355 "Active faults, probably active faults and associated fracture zones, San Mateo County, 1972."
X				Land with slope less than or equal to 15%	Slope shall be determined from Contour information on 7.5 minute series. U.S.G.S. topographic maps, except where more detailed information is available
	X			Land with slope less than or equal to 30%	
		X		Land with slope less than or equal to 50%	
X	X	X		Land outside areas defined as having severe slope instability	Severe slope instability includes designations V, VI and L (High, Very high and highest susceptibility to landsliding) from U.S.G.S. Map MF 360 - "Landslide susceptibility in San Mateo County, 1972."
X	X	X		Land outside Agricultural Preserve	An agricultural preserve legally commits land to non urban uses for a 10-year annually renewable period. Land under contract is legally recorded.
X	X	X		Land accessible to all weather roads	Accessible is defined as land less than one mile from an all weather road or from level topography well served by public roads. See map on file in County Planning Department office.
X	X	X		Land outside Designated Agricultural District	Designated Agricultural Districts generally contain good agricultural soils in agricultural use, outside primary urbanization areas along the coastal terrace. One extends from the southern limits of Half Moon Bay to Tunitas Creek, another from Pescadero to the south County line.
X				Land outside areas of Class I and II soils, or Class III soils rated good for artichokes or Brussels sprouts within climatic restraint line	Soil classifications are based on Soil Conservation Service soil studies and capability definitions. The Brussels sprouts climate constraint line is defined in the San Mateo Co. State Water Resources Study.
X				Land located outside adopted State Scenic Highway Corridor	Skyline is the County's only adopted State Scenic Highway. Its corridor, officially adopted by County and State, is on file in the Planning Department Office

*Cumulates density at 1 dwelling unit per 40 acres to be allocated to buildable areas elsewhere on site

- (7) Zoning Revision Program - The County is presently undertaking a major revision of its zoning ordinance in conjunction with a planning consulting firm. A basic objective of this revision program is to make the ordinance consistent with the objectives, policies, general land uses and programs specified in the General Plan and its various elements notably the Open Space and Conservation Elements. The work program is set up as a cooperative project, with the County Planning Department primarily responsible for general research plus final completion and production of the draft ordinances. The consultant is responsible for establishing basic format and organizational structure, special technical studies, drafting special or unusual provisions within the ordinances and conducting a final review of draft ordinances and conducting a final review of draft ordinances for legal adequacy.

Two basic tasks are being undertaken in the ordinance revision project: 1) the development of an Open Space Zoning Ordinance consistent with the Open Space Element of the General Plan, and 2) the modification of the County's basic zoning ordinance to make it consistent with the remaining elements of the General Plan. Initial efforts have concentrated on preparation of the Open Space Zoning Ordinance; modification of remaining zoning provisions will occur in a second phase.

- (8) The Open Space Zoning Ordinance - A draft Open Space Zoning Ordinance has been prepared and presented for review and adoption. It has been designed specifically to implement, to the extent possible under zoning powers, the conservation and open space objectives and policies contained in the Conservation and Open Space Element and the previously adopted County General Plan.
- (9) Planned Unit Development Procedures - The existing County Zoning Ordinance embodies procedures for the establishment of Planned Unit Development districts. The present controls are relatively simple, and a much-expanded version will be produced as part of the County Zoning Ordinance Revision Project. This will be particularly important in implementing the present County policy

that all substantial development along Skyline Boulevard be considered as planned units. The Density Matrix provisions presently in effect also encourage the use of planned unit development techniques within much of the County's Resource Management Area.

- (10) Subdivision Regulations - The San Mateo County Subdivision Ordinance was originally adopted in 1945 and has been amended considerably since then. The ordinance contains provisions for the design of subdivisions and standards for their development. Provisions require adequate drainage of lots, protection of watercourses traversing the subdivision, planting of street trees, restrictions on the use of septic tanks and separate community sewer systems, preparation of geologic and soils reports, provision of adequate water supply, provisions for the potential dedication of parks, playgrounds and public building sites. Work is presently being undertaken to revise and amend the entire ordinance in order to strengthen and clarify it, particularly with respect to required dedication of local park land, the dedication of open space easements, and provisions dealing with requirement governing minor land divisions. Special provisions are being developed to deal with the subdivision of land in the hillside areas. Special consideration will be given to natural resource protection and design techniques for maximizing the retention of open space. Work is scheduled to be completed in mid-1974.
- (11) Soils and Geologic Report - The County presently requires a geologic and soils report as part of the design of a subdivision. The County has retained a consulting geologist to work with developers and make technical interpretations and recommendations dealing with proposed development, particularly in geologically hazardous areas. Restrictions on development density due to geologic problems are built into the Adopted Density Matrix Policy and into the new Open Space Zoning Ordinance procedures

presently under consideration. More detailed standards and specifications will result from future work on the Seismic Safety and Safety Elements of the County General Plan. The County is presently in the process of employing a staff geologist to assist in this area.

- (12) Scenic Corridor Controls - Within San Mateo County, Skyline Boulevard has been designated as a State Scenic Highway and Routes 1 and 92 are included in the State Master Plan of Scenic Highways. The County has joined with the City and County of San Francisco, Santa Clara County, and the cities through which Skyline Boulevard runs in a joint powers agreement to develop coordinated controls along the Skyline Scenic Corridor. General design guidelines for the Corridor have been prepared and adopted by a committee formed under the joint powers agreement. San Mateo County has instituted special restrictive grading controls within the County's Grading Ordinance, and has encouraged reduced densities through special provisions within the Density Matrix procedure. Specific provisions within the Timber Harvesting Ordinance apply to the Scenic Corridor and give special protection under commercial logging operations. Proposals are presently being developed to add special controls on tree removal to the other Scenic Corridor controls to regulate small-scale removal of trees by property owners. Additional work has been scheduled with the joint powers committee to develop further recommendations and to extend and strengthen corridor controls within other jurisdictions.

(13) Other Resource Control Programs -

- a. Timber Harvesting Regulations - The San Mateo County Ordinance Code contains a section entitled, "Natural Resources Protection". Part One of this section contains 15 chapters dealing with the regulation of timber harvesting. Extremely high standards of performance are required in timber harvesting. The ordinance

promotes sustained yield logging practices in order to retain forest lands within the County and to prevent soil erosion, protect watershed lands and water quality, and to control flooding and landsliding. The County employs a Natural Resources Coordinator, who is responsible for supervising all logging operations within the County and seeing that the highest standards are observed.

- b. Heritage Tree Ordinance - Considerable interest has been expressed recently by the Board of Supervisors and the County Planning Commission in developing a heritage tree ordinance. Although the County has considerable control over commercial logging operations, there is no means to control indiscriminate cutting of trees on a non-commercial basis. Santa Cruz County has a heritage tree ordinance in effect, as do several cities within San Mateo County. The Planning staff has been instructed to develop a similar ordinance for the unincorporated areas of the County, and work has been scheduled during the end of 1973 and the early part of 1974.
- c. Quarrying, Grading and Topsoil Removal Regulations - Quarrying and topsoil removal within the unincorporated areas are presently controlled by County ordinance. Both quarrying and topsoil removal operations require permits and are subject to strict control. Many of the requirements are designed to prevent erosion and the blockage or siltation of natural drainage courses. Surface drainage must be controlled by dikes, barriers or drainage structures, and cut slopes must be replanted with suitable ground cover to prevent erosion. Operations are regulated and inspected by the County Engineer's office and the County's Natural Resources Coordinator.

Grading within the County is also regulated by ordinance. A permit is required for any grading resulting in the removal of over 300 c.b.y. (cubic bank yards) of material or, when the excavation is within a scenic corridor, over 25 c.b.y. of material. Grading plans are usually required and are checked by the Planning Department. The County Engineering staff also inspects actual grading operations. Standards are

established to "preserve the natural beauty of the County and protect property owners from unnecessary loss from erosion and flooding". No grading is permitted that would cause erosion or flooding due to the altering of established natural drainage channels. Exposed or finished banks or slopes over 30' high are required to have intercepting drains or terraces, and those having a slope steeper than 3 to 1 are required to be protected from erosion by planting, cribbing, walls or terracing. Other unprotected graded surfaces over 5000 square feet must be planted or controlled through paving or construction.

- d. Oil and Gas Well Regulations - Oil and gas well drilling and operation are also controlled by ordinance within San Mateo County. Permits and inspections are required. The ordinance prohibits actions that would permit salt water or water containing any other mineral or material to cause damage to soil, plant life, surface or subsurface water supply or allow its transference into any fresh water lagoon, river or stream. The ordinance also controls the use of earth and storage reservoirs used for storing petroleum or petroleum byproducts in order to insure that there is no contamination of water supply. The ordinance requires a minimum of 5 acres for a well drilling site and provides for the screening and replanting of operating or abandoned operations.

C. Proposed Programs

In addition to existing programs and work presently underway, this report contains recommendations for a number of additional programs to be undertaken as part of the County's continuing effort to expand and refine its resource management programs. The general nature and status of these recommended programs are described below.

- (1) Water Resources Management Programs - A number of special studies of the water resources of the County have been undertaken. However, additional work is required to evaluate water supply potential and water needs and to develop more detailed programs aimed at maintaining water quality and increasing water supply. Specific topics that must be

investigated include potential use of groundwater, groundwater recharge possibilities, methods of increasing the supply of agricultural water, the effect of septic tank use on water quality, and flood control and flood plain management programs.

- (2) Agricultural Resources Study & Economic Analysis - A detailed understanding of agricultural potential and problems within the County must be achieved. An evaluation of economic aspects of agriculture is proposed to be undertaken as part of an economic analysis of Coastside development for which funds already have been allocated. Specifically, the study will investigate the nature of economic and other barriers to a viable agricultural economy and their possible remedy. Additionally, it will focus on the probable economic impact of permitting different levels of urbanization on the Coastside under alternative phasing schemes and land uses.
- (3) Fish, Wildlife and Natural Vegetative Communities - Basic information is available to identify the general fish and wildlife resources of the County. Additional work must be done to detail these studies, to inventory species and to identify major habitat areas for fish and wildlife, including rare or endangered species, so that effective management programs can be developed. Such work should be undertaken in conjunction with appropriate State and County agencies and private interest groups. An allied need is for further study of significant natural vegetative communities in the County, particularly rare or endangered vegetative types.
- (4) Mineral and Energy Resources - A basic understanding of the mineral resources in the County is available through work being conducted by the United States Geological Survey. More detailed information needs to be developed, however, and potential management programs need to be investigated. With the growing recognition of possible energy shortages, work also should be programmed to identify energy resources and potential methods for reduction of energy consumption.

- (5) Fire Safe Programs - Fire safety is an important concern that must be investigated, particularly in remote rural lands. The Board of Supervisors has approved the policy of developing a fire safe program, as recommended in the Forest Resources Report. A fire hazard classification system, developed by the State Division of Forestry, is proposed to be utilized within the County to rank severity of fire hazards. Additional work will be scheduled to identify the types of development regulations and construction standards that should be imposed to increase fire safety, including the required local water supply necessary for fire suppression purposes.
- (6) Standards and Criteria for Private Recreation Development - Density standards within the proposed Resource Management district primarily relate to residential development. Controls on the intensity of other uses, particularly commercial recreational uses, must be devised and adopted. Work is scheduled in this area beginning early in 1974. In addition to intensity of use standards, other development review criteria will be proposed that relate specifically to commercial recreational development. Studies will be made of the types of private recreational uses compatible with the Resource Management district.

PARKS AND OPEN SPACE PLAN LAND USE DESIGNATIONS

ADOPTED BY THE PLANNING COMMISSION • DECEMBER 12, 1973 (resolution no. 2950)
ADOPTED BY THE BOARD OF SUPERVISORS • DECEMBER 20, 1973 (resolution no. 32283)

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